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A Generic Classification of the Subfamily Arctiinae of the Palaearctic and Oriental Regions based on the Male and Female Genitalia (Lepidoptera, Arctiidae)* Part II

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Abstract In this part the *Spilarctia* genus group is discussed and six new genera, *Nannoarctia, Argyarctia, Cladarctia, Eospilarctia, Paraspilarctia* and *Chionarctia* are erected.

4.1.6 The *Spilarctia* genus group

The *Spilarctia* genus group is similar to the *Rhyparioides* genus group in the following fundamental structures of male and female genitalia. The following similarities are detected in the fundamental structures of male and female genitalia of the *Rhyparioides* and *Spilarctia* genus groups: Male valva more or less reduced in size; female 8th abdominal segment clasped by male valvae during copulation. But this genus group is characterized by the following autapomorphies: In male genitalia uncus wide basally, gradually narrowing apically and completely united with tegumen so that dorsum nearly triangular in dorsal view; fenestrula on dorsum of male genitalia absent; in female genitalia sinus vaginalis present.

This genus group contains the following 19 genera, *Artimelia* RAMBUR, *Micrarctia* SEITZ, *Nannoarctia* KÔDA, gen. nov., *Diaphora* STEPHENS, *Epatolmis* BUTLER, *Phragmatobia* STEPHENS, *Thanatarctia* BUTLER, *Amsactoides* MATSUMURA, *Amsacta* WALKER, *Areas* WALKER, *Alphaea* WALKER, *Argyarctia* KÔDA, gen. nov., *Creatonotos* HÜBNER, *Eospilarctia* KÔDA, gen. nov., *Cladarctia* KÔDA gen. nov., *Paraspilarctia* KÔDA, gen. nov., *Spilosoma* CURTIS, *Chionarctia* KÔDA gen. nov. and *Spilarctia* BUTLER.

4.1.6.1 Genus ***Artimelia*** RAMBUR, 1866

Artimelia RAMBUR, 1866, Cat. syst. Lepid. Andalousie (2) : 248. Type species: *Chelonia latreillii* GODART, [1823], by monotypy.

Male external genitalia: Tegumen moderately large, broad anterior part and strongly narrowed posterior part continuous to each other; pedunculus narrow and

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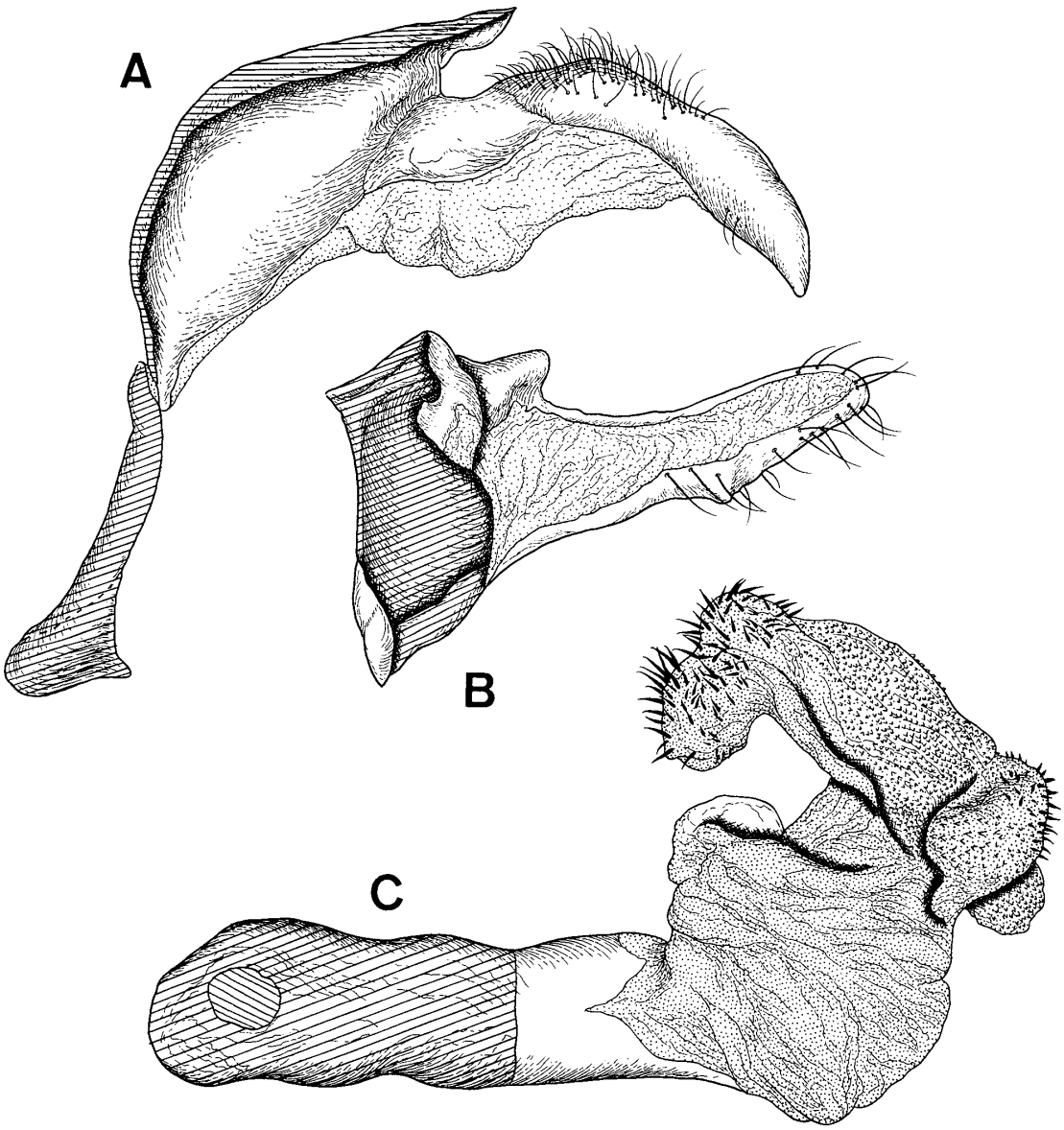

Fig. 57. Male external genitalia of *Artimelia latreillii* (GODART). A. Ring in lateral view ; B. Inside of right valva ; C. Phallus in dorsal view.

short ; acrotergite developed. Fenestrula and lateral membranous slits absent. Uncus moderately long, slightly tapered to apex and slightly curved ventrally, with many hairs on dorsal portion of anterior 1/2. Vinculum moderately long and slender, 2/5 as deep as ring ; saccus small, 1/7 as long as height of ring. Valva small and simple, nearly triangular, with apical portion much tapered ; subdivision of inner wall of valva indistinct ; costa rather broad and weakly produced dorsodistally, continuing to dorsoproximal portion of ampulla ; distal 2/3 of valva narrow and elongate, not subdivided into ampulla and harpe, narrowly sclerotized marginally, sparsely haired ; anellifer occupying almost of inner wall of valva, extending to subapical portion of valva ; sacculus slender and continuous to ventroproximal portion of harpe+ampulla ;

transtilla rather broad. Juxta rather large and circular. Phallus thick and short, without carina penis; subzonal sheath 2/3 as long as aedeagus; vesica everted toward right side, subequal in length to aedeagus, with a sclerotized plate proximally, and many spines, short spines and minute spinules distally.

This genus seems to be related to the following two genera, and these three genera are distinctive in having the following synapomorphies: Sprazonal sheath of aedeagus curved dorsally; vesica everted toward right side. The swelling of costa of the male genitalia seems to be an apomorphic character of this genus.

I examined the male genitalia of the following species.

1. *Artimelia latreillii* (GODART, [1823]) (Figs. 57, 108A)
   Chelonia latreillii GODART, [1823], Hist. nat. Lepid. Papillons Fr. 4: 318.
   Distribution: Spain (Mountain region).

4.1.6.2 Genus ***Micrarctia*** SEITZ, 1910

Micrarctia SEITZ, 1910, Gross-Schmett. Erde 2: 83. Type species: *Nyctemera trigona* LEECH, 1899, by subsequent designation by HAMPSON, 1920, Cat. Lepid. Phalaenae Br. Mus. (Suppl.) 2: 342.

Male external genitalia: Tegumen rather large, longer than uncus separated into anterior and posterior parts by a weakly sclerotized median zone; pedunculus short; acrotergite weakly developed. Fenestrula and lateral membranous slits absent. Uncus rather broad and nearly straight, with many short hairs on its basal 2/3. Vinculum moderately long, 1/2 as deep as ring; saccus moderately large, 1/4 as long as height of ring. Valva rather small and nearly rectangular, strongly emarginate ventroproximally; inner wall of valva extensively occupied by anellifer; costa very narrow and long; ampulla region very narrow and produced to form a small projection at dorsodistal corner of valva; sacculus very narrow and long; distal 1/3 of outer wall of valva bearing many long hairs. Juxta rather large, nearly ampulliform in ventral view. Phallus moderate in size; suprazonal sheath curved dorsally at the middle, without carina penis; subzonal sheath 2/3 as long as aedeagus; coecum penis weakly developed; vesica everted towards right side, 4/5 as long as aedeagus, with a sclerite and many minute spinules.

As I have not examined the genitalia of the type species of the genus, *M. trigona* LEECH, the above description is based on the following two species. The male genitalia of the two species are much similar to those of the genus *Artimelia,* but differ from the latter in the simple plesiomorphic costa, and in the strongly emarginate, apomorphic ventroproximal portion of the valva.

I examined the male genitalia of the following species.

1. *Micrarctia kindermanni* (STRAND, 1867) (Fig. 108B)
   Arctia kindermanni STRAND, 1867, *Stett. ent. Zeit.* **28**: 102.
   Distribution: Ural, Altai, Siberia, Mongolia and China.
2. *Micrarctia y-albula* (OBERTHÜR, 1886) (Figs. 58, 108C)

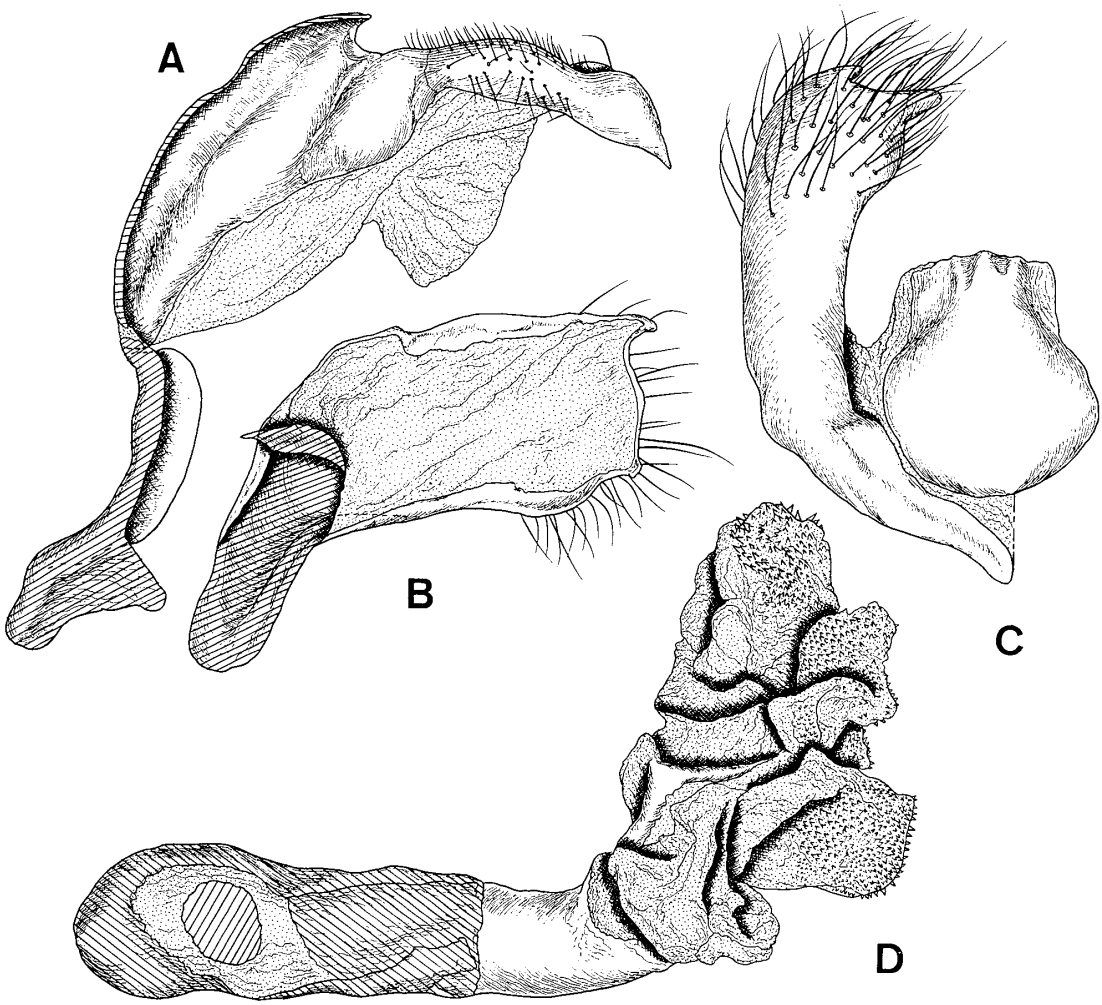

Fig. 58. Male external genitalia of *Micrarctia y-albula* (OBERTHÜR). A. Ring in lateral view; B. Inside of right valva; C. Left valva and juxta in ventral view; D. Phallus in dorsal view.

Arctia y-albula OBERTHÜR, 1886, *Et. Ent.* **11**: 30, pl.5, fig.29.
Distribution: West China.

4.1.6.3 **Genus *Nannoarctia* KÔDA**, gen. nov.

Type species: *Aloa integra* WALKER, 1855.

Head: Frons at middle 1/3 as wide as head, with smooth short scales. Labial palpus porrect, its tip reaching to the level of ventral margin of head; and projecting forward only slightly (0.06 head length) beyond head; length of labial palpus (direct distance between base and tip of palpus) 0.8 × head length; 1st segment 1.3 × as long as 2nd; 3rd segment 1/2 as long as 2nd. Maxillary palpus very small and rounded. Antenna 0.37 × as long as fore wing; flagellum serrate, consisting of 43 segments; ratio of length to width of 1st flagellomere 0.8, middle ones 2.0, apical one 3.3.

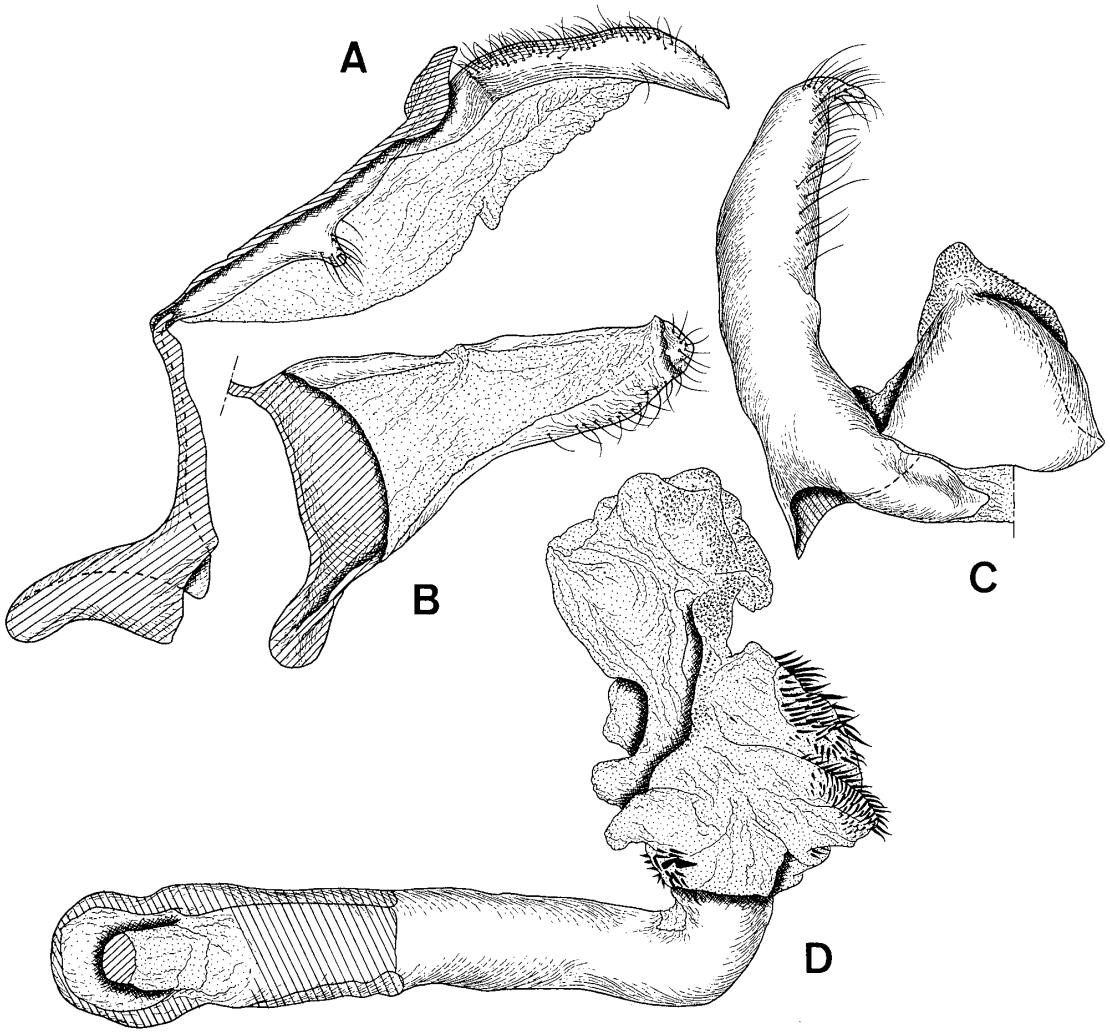

Fig. 59. Male external genitalia of *Nannoarctia integra* (WALKER). A. Ring in lateral view; B. Inside of right valva; C. Left valva and juxta in ventral view; D. Phallus in dorsal view.

Legs. Fore leg: Trochanter 1/4 as long as tibia; tibia 3/4 as long as femur; tarsas 1.2 × as long as tibia; claw 2/3 as long as 5th tarsomere; epiphysis 1/3 as long as tibia and situated at the middle. Mid leg: Trochanter 1/5 as long as tibia; tibia 5/6 as long as femur; anterior terminal spur 0.10 ×, posterior terminal spur 0.12 × as long as tibia. Hind leg: Trochanter 1/5 as long as tibia; tibia 1.14 × as long as femur; median spurs situated at 3/4 from base of tibia; anterior median spur 0.13 ×, posterior median spur 0.15 ×, anterior terminal spur 0.10 ×, posterior terminal spur 0.13 × as long as tibia.

Wing venation: Fore wing with vein 3 from before lower angle of discoidal cell; 5 from above lower angle; 6 from upper angle: 7, 8, 9 and 10 stalked; 11 from discoidal cell. Hind wing with veins 3 and 5 from near lower angle of discoidal cell; 6 and 7 from upper angle; 8 from middle of discoidal cell.

Male external genitalia: Tegumen long and slender, anterior and posterior parts of

tegumen continuous to each other leaving a weak transverse ridge; posterior margin of tegumen projected into a short process posteroventrally at ventral 2/5, which is clothed with several short hairs; pedunculus very short; acrotergite developed. Fenestrula and lateral membranous slits absent. Uncus moderately long, nearly straight and sparsely with short hairs, from base to anterior 2/3 parallel-sided and tapering to apex. Vinculum rather long and slender, 1/2 as deep as ring; saccus moderately large, 1/3 as long as height of ring. Valva rather small and simple, gradually tapering distally, its distal portion not subdivided into ampulla and harpe; costa very slender; ampulla region slender and long, separated from costa by a narrow membranous incision of anellifer, apical portion of harpe+ampulla strongly curved inwardly, clothed with many short hairs around distal margin to distal 1/3 of ventral margin; anellifer occupying most of inner wall of valva; sacculus slender and continuous to ventroproximal portion of harpe region; transtilla very narrow and extending inwardly. Juxta moderately large, nearly triangular in ventral view, with dense minute spinules on distal portion. Phallus long; suprazonal sheath curved dorsolaterally at apical 1/4, without carina penis; subzonal sheath 1/2 as long as aedeagus; vesica everted towards right side, 3/5 as long as aedeagus, with several short spines, spines and many dense minute spinules.

The genus *Nannoarctia* represents the primitive position in the phylogeny of the *Spilarctia* genus group. This genus is erected here for only one species, *integra,* which has hitherto been included into the genus *Pericallia* of the *Arctia* genus group.

This genus is very characteristic in having a small process bearing several short hairs of male tegumen and minute spinules of male juxta.

1. *Nannoarctia integra* (WALKER, 1855) **comb. nov.** (Figs. 59, 108D)
   Aloa integra WALKER, 1855, List Specimen lepid. Insects Colln Br. Mus, 3: 654.
   Distribution: Philippines and Taiwan.

4.1.6.4 Genus ***Diaphora*** [STEPHENS], 1827

Diaphora [STEPHENS], 1827, in anonymous, Retrospective Review (2) 1: 244. Type species: *Phalaena mendica* CLERK, 1759, by monotypy.

Male external genitalia: Tegumen large; anterior and posterior parts of tegumen continuous to each other leaving a weak transeverse ridge; pedunculus short; acrotergite weakly developed. Fenestrula and lateral membranous slits absent. Uncus rather thick, basal 3/5 nearly parallel-sided and weakly tapered to the apex, with many hairs basally. Vinculum rather broad, 1/2 as deep as ring; saccus undeveloped. Valva rather small; costa very narrow and continuous to proximal portion of ampulla region; apical portion of valva divided into a long dorsal and a shorter ventral processes bearing dense hairs; anellifer broad and occupying basal 2/3 of inner wall of valva; sacculus narrow and continuous to harpe near base of the ventral process. Juxta in ventral view nearly oblong, basal 2/3 rounded. Phallus short and nearly straight; subzonal sheath 1/2 as long as aedeagus; coecum penis well developed and

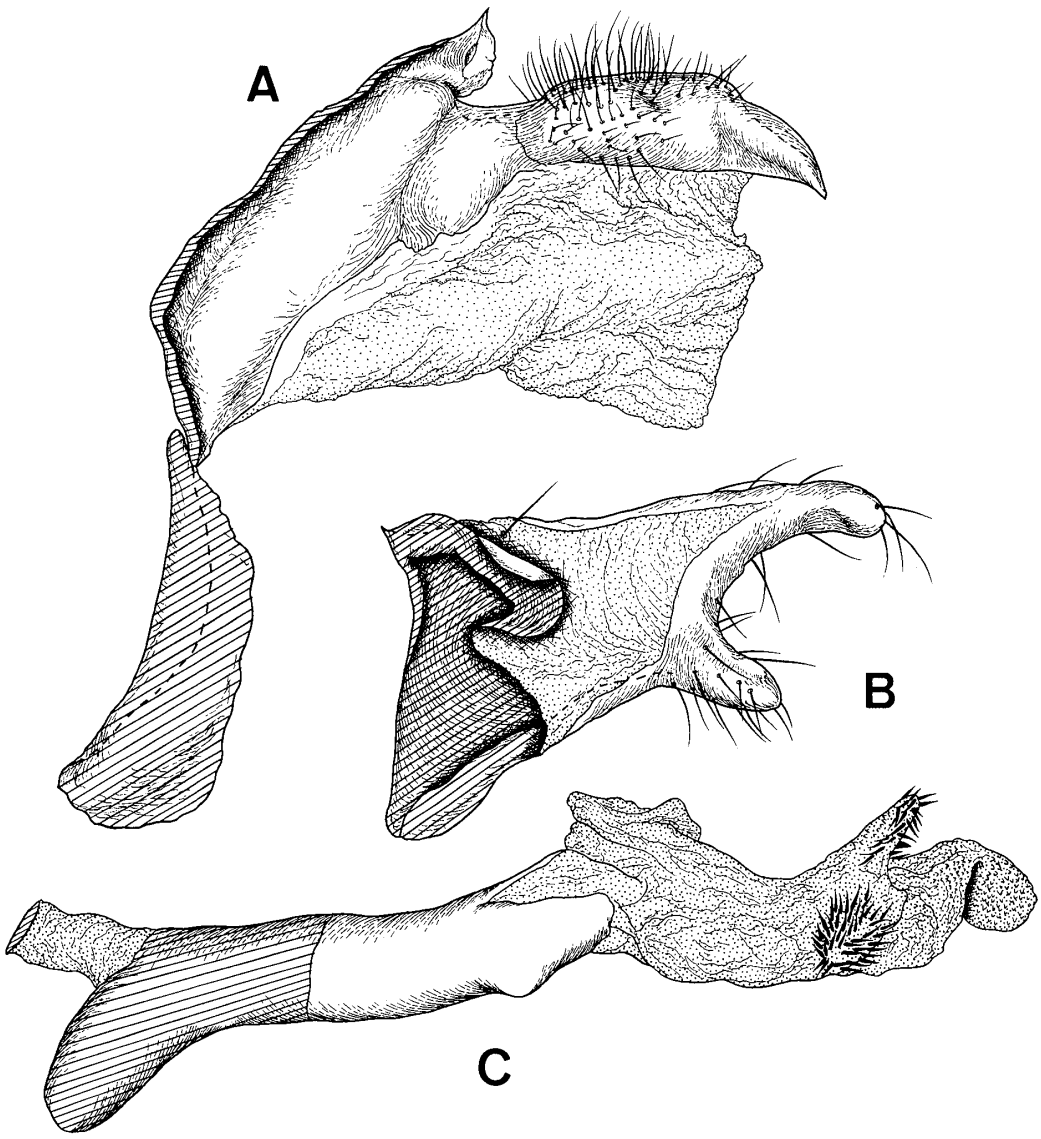

Fig. 60. Male external genitalia of *Diaphora mendica* (CLERK). A. Ring in lateral view ; B. Inside of right valva ; C. Phallus in lateral view.

protruding anteroventrally ; vesica rather simple, everted posteriorly, 2/3 as long as aedeagus, with 2 groups of many spines and dense minute spinules on distal 1/2 of vesica.

This genus is characteritic in having two processes on distal portion of male valva. The male genitalia of this genus are somewhat similar to those of the following two genera in the rather simple, posteriorly projecting vesica, but this character state is plesiomorphic and does not suggest the close relationships to them.

Only one species is included in this genus.

1. *Diaphora mendica* (CLERK, 1759) (Figs. 60, 108E, F)
   Phalaena mendica CLERK, 1759, Icom. Insect. rariorum 1 : pl. 3, fig.5.

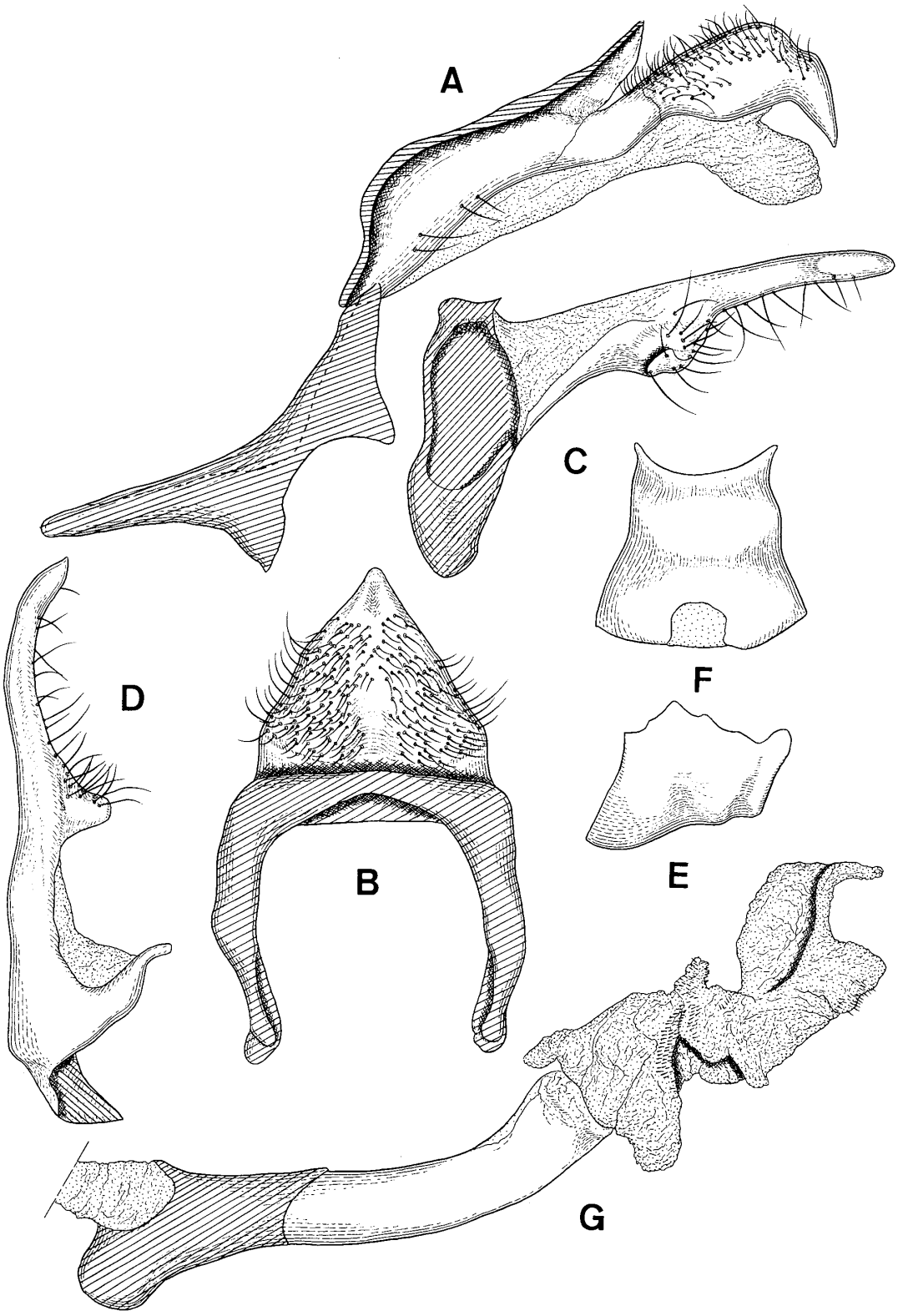

Fig. 61. Male external genitalia of *Epatolmis caesarea* (GOEZE). A. Ring in lateral view ; B. Dorsum in dorsal view ; C. Inside of right valva ; D. *Ditto* in dorsal view ; E. Juxta in lateral view ; F. *Ditto* in ventral view ; G. Phallus in lateral view.

Distribution: Throughout Europe with the exception of the Polar Region, and in Anterior and Central Asia to the Altai.

4.1.6.5 Genus ***Epatolmis*** BUTLER, 1877

Epatolmis BUTLER, 1877, *Trans. ent. Soc. Lond.* **1877**: 348. Type species: *Atolmis japonica* WALKER, [1865], by original designation.
A. japonica is a junior subjective synonym of *Phalaena caesarea* GOEZE, 1781.

Male external genitalia: Tegumen moderately large, anterior and posterior parts completely united with each other; pedunculus short; acrotergite developed. Fenestrula and lateral membranous slits absent. Uncus in dorsal view very broad basally, slightly larger than wide, with many short hairs on basal 4/5, in lateral view weakly swollen dorsally at the middle, apical 1/2 tapered and curved ventrally. Vinculum large, 1/2 as deep as ring, acrosternite much developed strongly expanded at the middle; saccus long, 1/2 as long as height of ring. Valva nearly long-horn shaped, strongly tapered beyond subbasal portion; costa undeveloped; harpe+ampulla produced posteriorly to form a long process, ventroproximal portion of harpe+ampulla produced inwardly to form a triangular process; anellifer occupying basal 1/2 of inner wall; sacculus rather broad and continuous to ventroproximal portion of harpe+ampulla; transtilla rather narrow and short. Juxta in ventral view nearly trapezoid, apical margin weakly emerginate. Phallus moderately long; suprazonal sheath weakly curved dorsally, without carina penis; subzonal sheath 2/5 as long as aedeagus; coecum penis small; vesica simple, everted dorsodistally, 2/3 as long as aedeagus, with 2 groups of many minute spinules.

This genus seems to be closely related to the genus *Phragmatobia* in having well developed acrosternite of vinculum of male genitalia. It is easily distinguished from the next genus by the following apomorphies in the male genitalia: Extremely broad uncus; absence of costa of valva, and peculiar projection at ventroproximal portion of harpe+ampulla of valva.

I examined the male genitalia of the following species.

1. *Epatolmis caesarea* (GOEZE, 1781) (Figs. 61, 108G)
Phalaena caesarea GOEZE, 1781, *Ent. Beytrage* 3 (3): 63.
Distribution: From Germany and South Russia to Palaearctic Region including Japan (Hokkaido, Honshu and Kyushu).

4.1.6.6 Genus ***Phragmatobia*** STEPHENS, 1828

Phragmatobia STEPHENS, 1828, Illust. Br. Ent. (Haustellata) 2: 55, 73. Type species: *Phalaena fuliginosa* LINNAEUS, 1758, by monotypy.

Male external genitalia: Dorsum in dorsal view elongate, triangular. Tegumen narrow and moderately long, its anterior and posterior parts continuous to each other; pedunculus very short; acrotergite developed. Fenestrula and lateral membranous

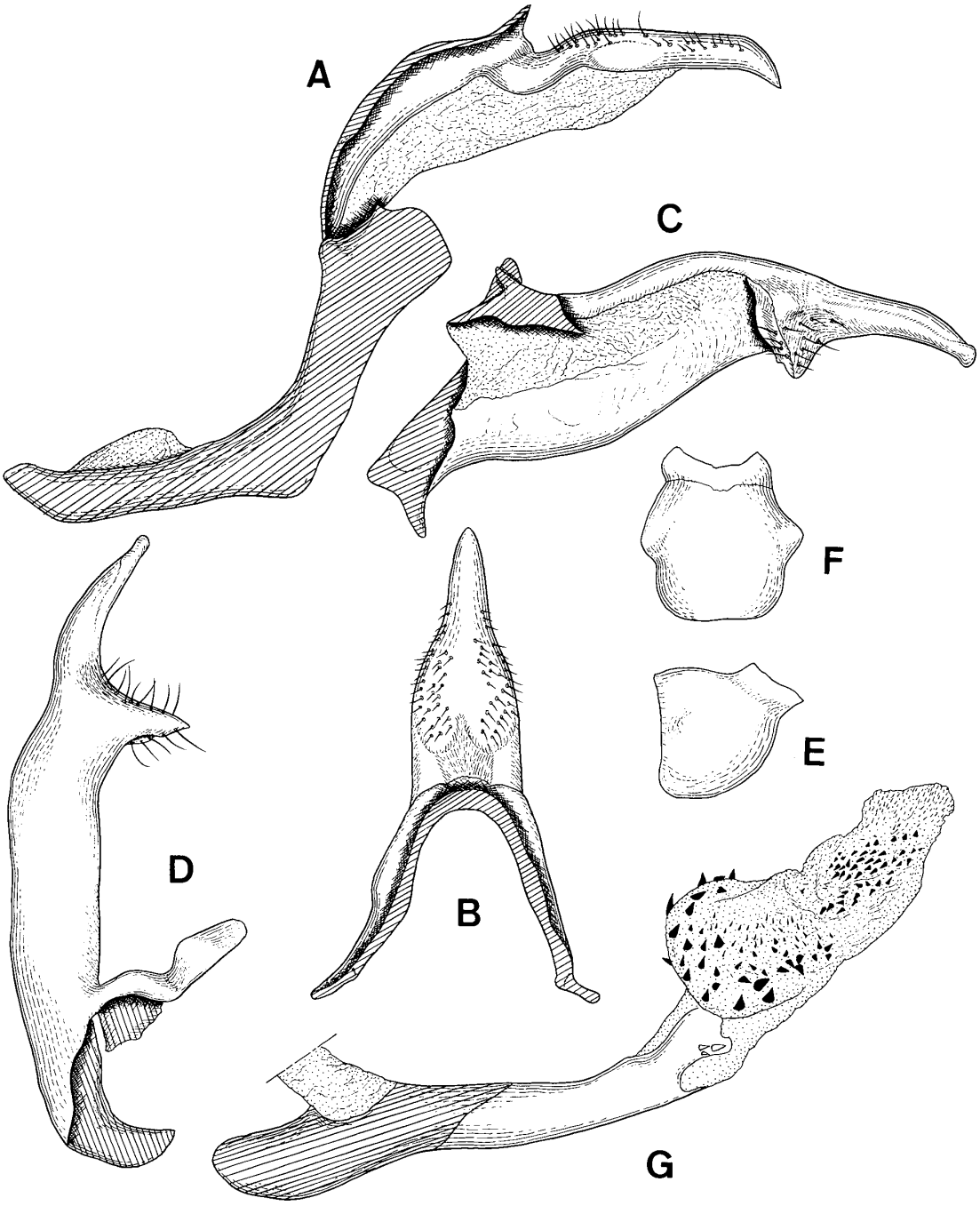

Fig. 62. Male external genitalia of *Phragmatobia fuliginosa* (LINNAEUS). A. Ring in lateral view ; B. Dorsum in dorsal view ; C. Inside of right valva ; D. *Ditto* in dorsal view ; E. Juxta in lateral view ; F. *Ditto* in ventral view ; G. Phallus in lateral view.

slits absent. Uncus rather slender and nearly straight and sparsely with short hairs, apical portion tapered and weakly curved ventrally towards apex. Vinculum 4/7 as long as ring, with much developed acrosternite which is very large, wide and posterodorsally expanded ; saccus very long, 1/2 as long as height of ring. Valva long and nearly lanceolate in shape ; costa narrow and long, continuing to proximal portion of

ampulla region; harpe+ampulla slender and tapering towards tip, and its basal portion produced inwardly to from a wedge-shaped short process bearing short hairs; anellifer narrow occupying basal 1/2 of inner wall, more or less shifted dorsally; sacculus wide and long, occupying ventral 1/2 of basal portion of valva; transtilla long, extending inwardly. Juxta rather small and nearly quadrate in ventral view. Phallus rather slender; suprazonal sheath weakly curved dorsally, with a few small spines on apical portion of right lateral wall; subzonal sheath 1/2 as long as aedeagus; vesica simple, everted posterodorsally, 2/3 as long as aedeagus, with many small spines and numerous minute spinules.

This genus is close to the genus *Epatolmis*, but distinctive in having the following apomorphies in the male genitalia: Small spines of right lateral wall of aedeagus; a wedge-shaped process of harpe+ampulla of valva.

I examined the male genitalia of the following species.

1. *Phragmatobia fuliginosa* (LINNAEUS, 1758) (Figs. 62, 108H)
   Phalaena fuliginosa LINNAEUS, 1758, Syst. Nat. (Edn 10): 509.
   Distribution: Holarctic Region including Japan (Hokkaido and Honshu).

4.1.6.7 Genus ***Thanatarctia*** BUTLER, 1877

Thanatarctia BUTLER, 1877, *Ann. Mag. nat. Hist.* (4) **20**: 395. Type species: *Thanatarctia infernalis* BUTLER, 1877, by original designation.

Male external genitalia: Dorsum long and narrow, triangular in shape. Tegumen moderately large; anterior and posterior parts completely united with each other; dorsal portion of anterior part weakly upheaved dorsally; pedunculus short; acrotergite weakly developed. Fenestrula and lateral membranous slits absent. Uncus well developed and long, long-billed in shape; its posterior 1/2 slightly curved ventrally and tapering towards tip; uncus with sparse short hairs. Vinculum narrow and rather short, 2/3 – 3/4 as deep as ring, its dorsal portion very narrow, elongated, and connected to pedunculus of tegumen; saccus usually long and large, 1/3 – 2/5 as long as height of ring. Valva simple and lageniform in inner view, much constricted ventrally at subbasal portion, then evenly and weakly tapering apically; costa undeveloped; harpe+ampulla slender and tapering towards tip and its middle portion expanding inwardly; anellifer much reduced, narrow and occupying basal 1/4 – 1/3 of inner wall; sacculus very narrow and continuous to ventroproximal portion of harpe+ampulla; transtilla rather wide and elongated inwardly. Basal 1/2 of juxta rounded and weakly constricted at the middle, posterior 1/2 nearly quadrate, with emerginate apical margin. Phallus rather thick and nearly straight, rarely with spinules on dorsodistal portion; subzonal sheath 2/5 – 3/7 as long as aedeagus; coecum penis well developed; vesica simple and small, everted distally or dorsodistally, 1/5 – 1/4 as long as aedeagus, with 1 or 2 groups of many long spines (rarely spinules).

Female external genitalia: Seventh abdominal tergum and sternum strongly desclerotized or disappeared, so that entire surface of this segment is often almost

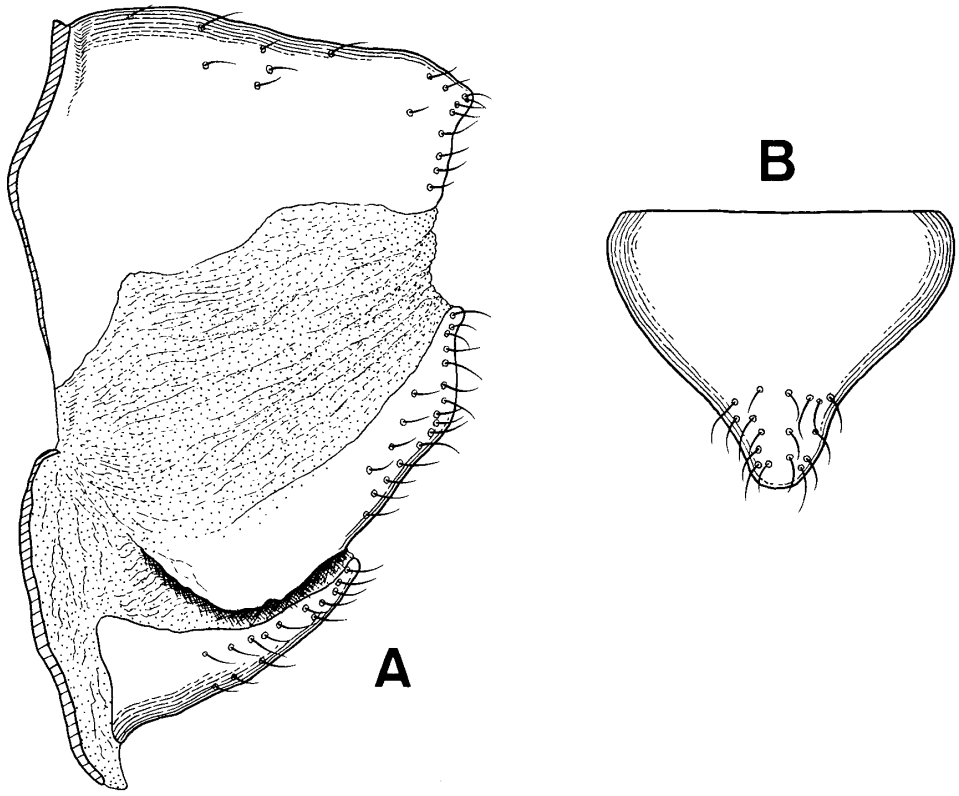

Fig. 63. Male 8th abdominal segment of *Thanatarctia inaequalis* (BUTLER). A. Eighth abdominal segment in lateral view; B. Eighth sternum in ventral view.

membranous and clothed with dense soft short hairs which are used to cover the laid eggs. Eighth abdominal segment 1/4 – 1/3 as high as 7th segment; eighth abdominal tergum and sternum separated by membranous lateral areas of various widths. Lamella antevaginalis narrow or wide, completely fused with lamella postvaginalis laterally. Lamella postvaginalis rather wide and concaved. Ostium bursae circular. Apophysis anterioris short, directed anteriorly or anterodorsally, 1/5 – 1/4 as long as height of 8th segment. Papilla analis in lateral view rather small and trapezoid, with many short hairs; apophysis posterioris 2 × as long as apophysis anterioris.

Female internal reproductive organs: Anterior end of bursa copulatrix reaching to posterior 1/5 of 6th abdominal segment. Sinus vaginalis slightly developed. Separation of antrum and ductus bursae indistinct; ductus burae directing or curved ventrally, curved dorsally near cervix bursae. Cervix bursae rather small and sclerotized, with several irregular row of furrows on its left lateral surface. Corpus bursae membranous, globular or oval, 1/2 as long as bursa copulatrix, without signa. Lower part of ductus seminalis short, attached to right lateral side of cervix bursae; bulla seminalis large and oval, as large as corpus bursae or larger, situated above or bellow cervix bursae; upper part of ductus seminalis arising from posterior end of bulla seminalis, weakly curved posterodorsally or directed dorsally, attached to ventral surface of vestibulum. Spermatheca moderate in size. Glandula sevacea large, usually subequal in length to bursa copulatrix, in *imparilis* very large, 1.8 × as long as bursa

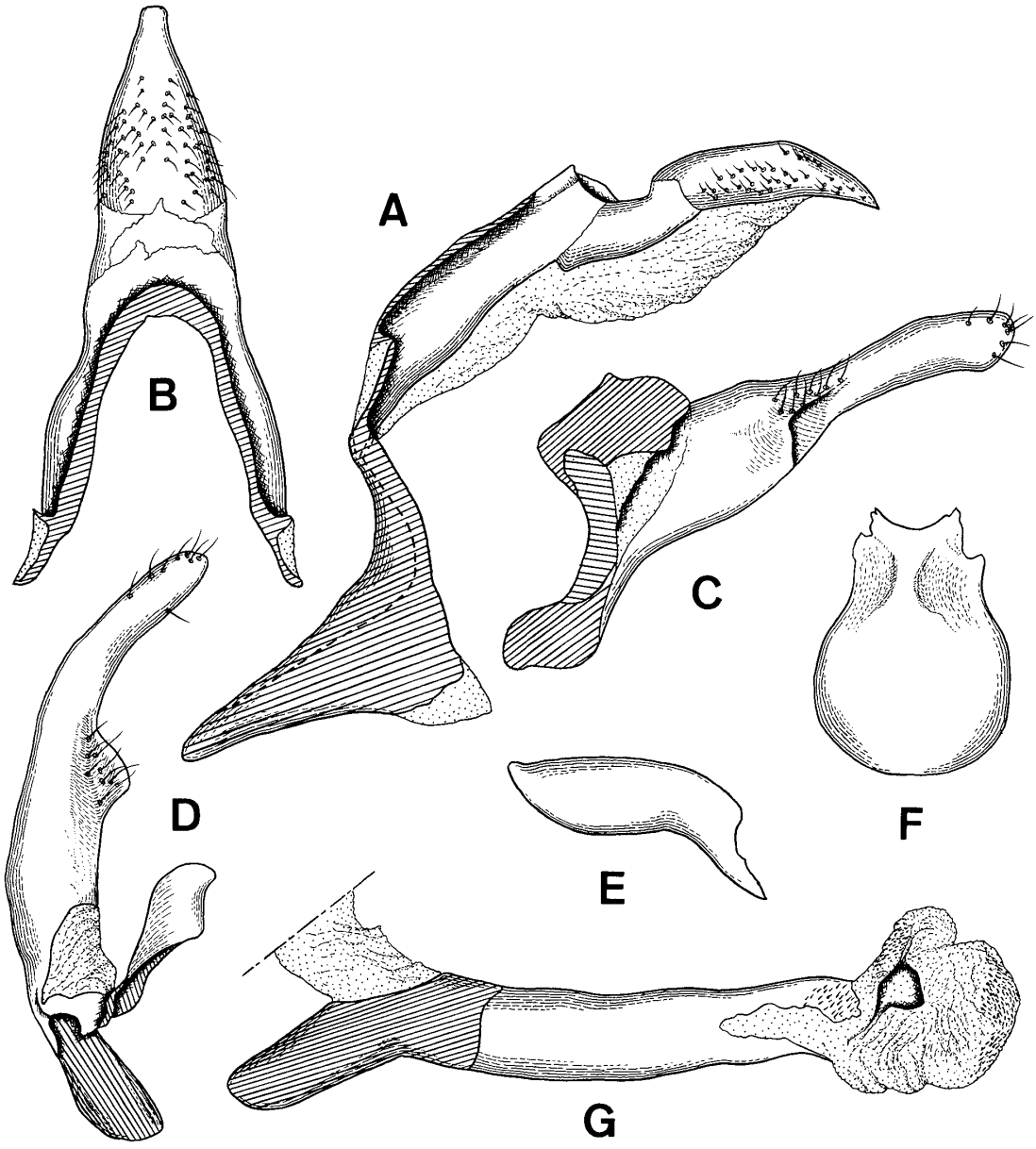

Fig. 64. Male external genitalia of *Thanatarctia imparilis* (BUTLER). A. Ring in lateral view; B. Dorsum in dorsal view; C. Inside of right valva; D. *Ditto* in dorsal view; E. Juxta in lateral view; F. *Ditto* in ventral view; G. Phallus in lateral view.

copulatrix. Scent gland rather long and simple, with or without a short or long branch.

The genus *Thanatarctia* consists here of fourteen species. They have hitherto been included into the genus *Spilarctia* or *Spilosoma*. The overall resemblance between this genus and *Spilarctia* is apparently due to symplesiomorphy on the most character states of wing marking. But this genus is quite different from the above-mentioned genera in the male genitalia. This genus is characterized by the following autapomorphies: Harpe+ampulla of male valva with a triangle process projection; one or two groups of many long spines of cornuti of aedeagus; entire surface of female 7th

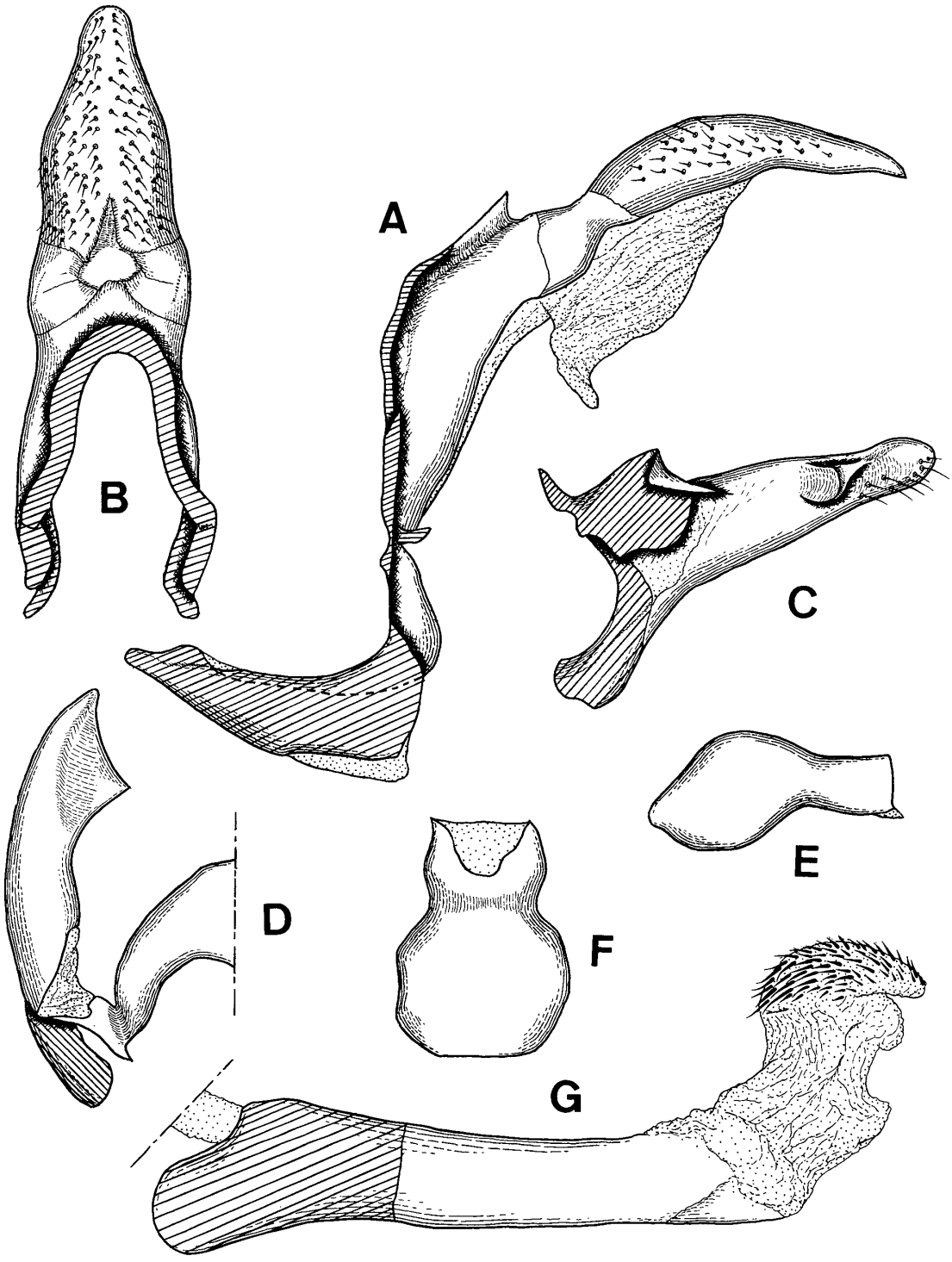

Fig. 65. Male external genitalia of *Thanatarctia inaequalis* (BUTLER). A. Ring in lateral view; B. Dorsum in dorsal view; C. Inside of right valva; D. *Ditto* in dorsal view; E. Juxta in lateral view; F. *Ditto* in ventral view; G. Phallus in lateral view.

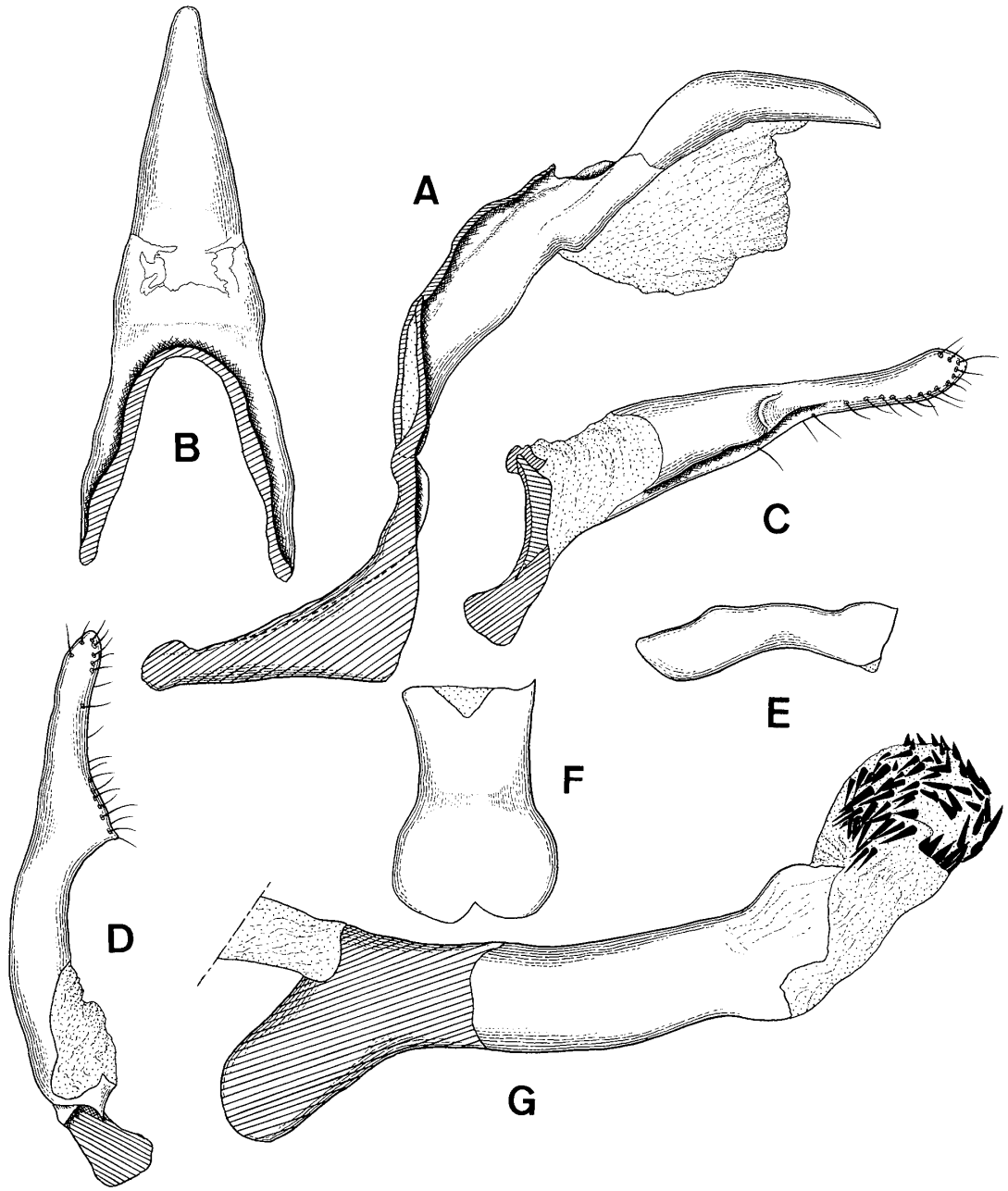

Fig. 66. Male external genitalia of *Thanatarctia infernalis* BUTLER. A. Ring in lateral view; B. Dorsum in dorsal view; C. Inside of right valva: D. *Ditto* in dorsal view; E. Juxta in lateral view; F. *Ditto* in ventral view; G. Phallus in lateral view.

abdominal segment densely clothed with soft short hairs.

I examined the genitalia of the following species.

1. *Thanatarctia flammeola* (MOORE, 1877) **comb. nov.** (Fig. 109A)
Alpenus flammeola MOORE, 1877, *Ann. Mag. nat. Hist.* (4) **20**: 89.
Distribution: East China and Japan.

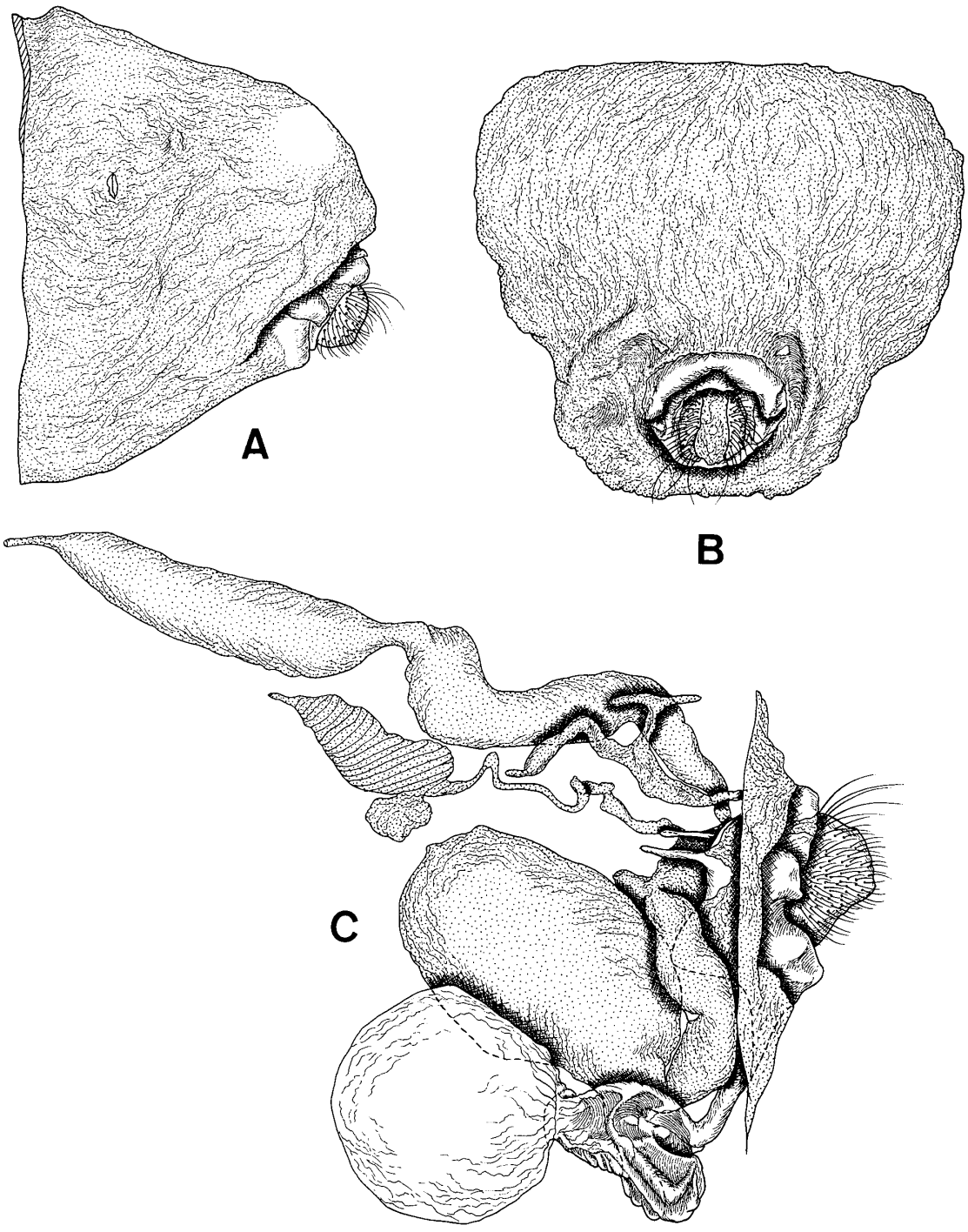

Fig. 67. Female external genitalia and internal reproductive organs of *Thanatarctia imparilis* (BUTLER). A. External genitalia in lateral view; B. *Ditto* in postero-ventral view; C. Internal reproductive organs in lateral view (left).

2. *Thanatarctia flavalis* (MOORE, 1865) **comb. nov.** (Fig. 109B)
Spilosoma flavalis MOORE, 1865, *Proc. zool. Soc. Lond.* **1865**: 809.
Distribution: Nepal, Sikkim, Bhutan and West China.

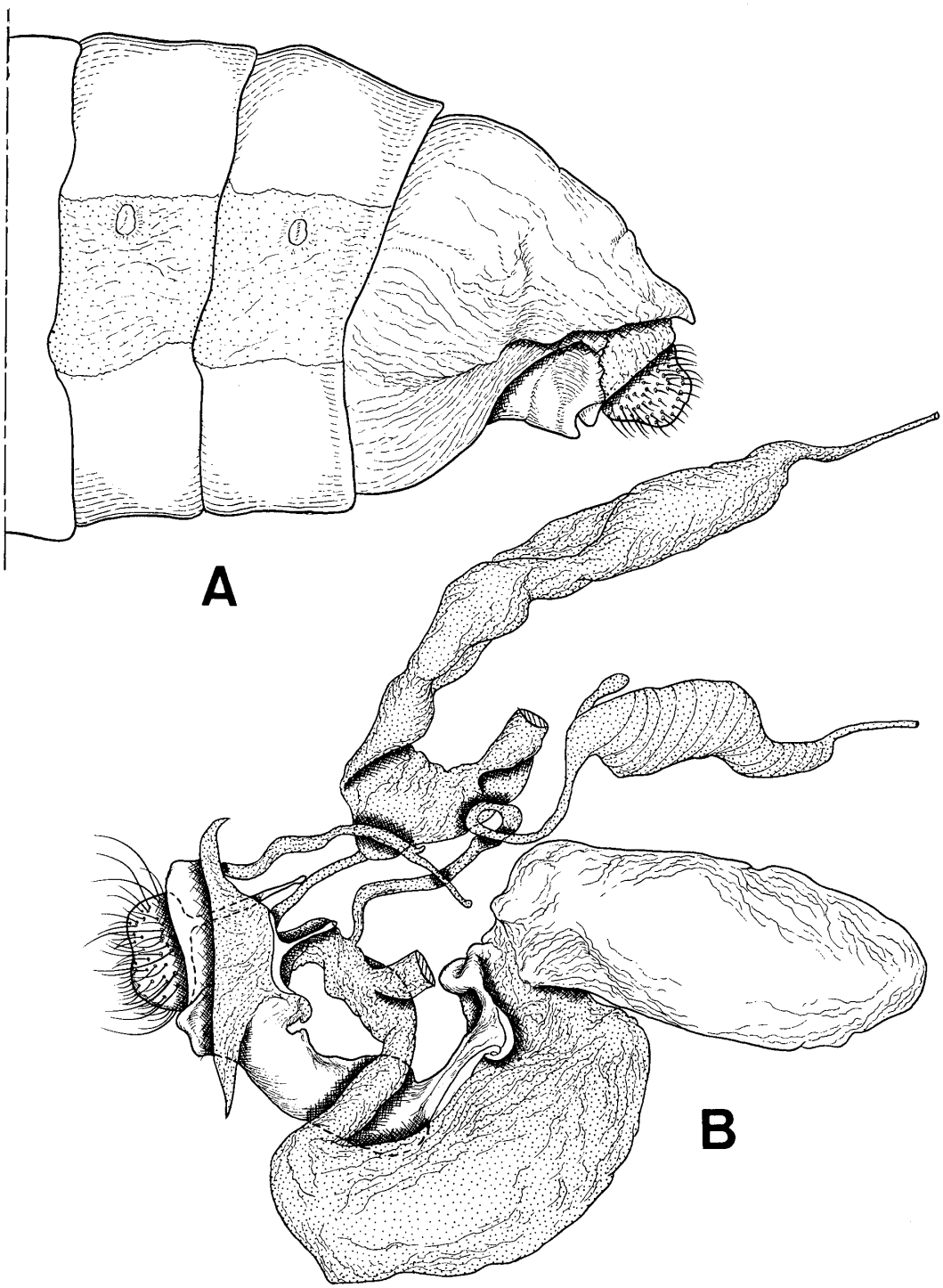

Fig. 68. Female external genitalia and internal reproductive organs of *Thanatarctia inaequalis* (BUTLER). A. External genitalia in lateral view; B. Internal reproductive organs in lateral view (right).

3. *Thanatarctia flavens* (MOORE, 1879) **comb. nov.** (Fig. 109C)
Alpenus flavens MOORE, 1879, Lepid. Atkins.: 39.
Distribution: Nepal, Sikkim and Assam.

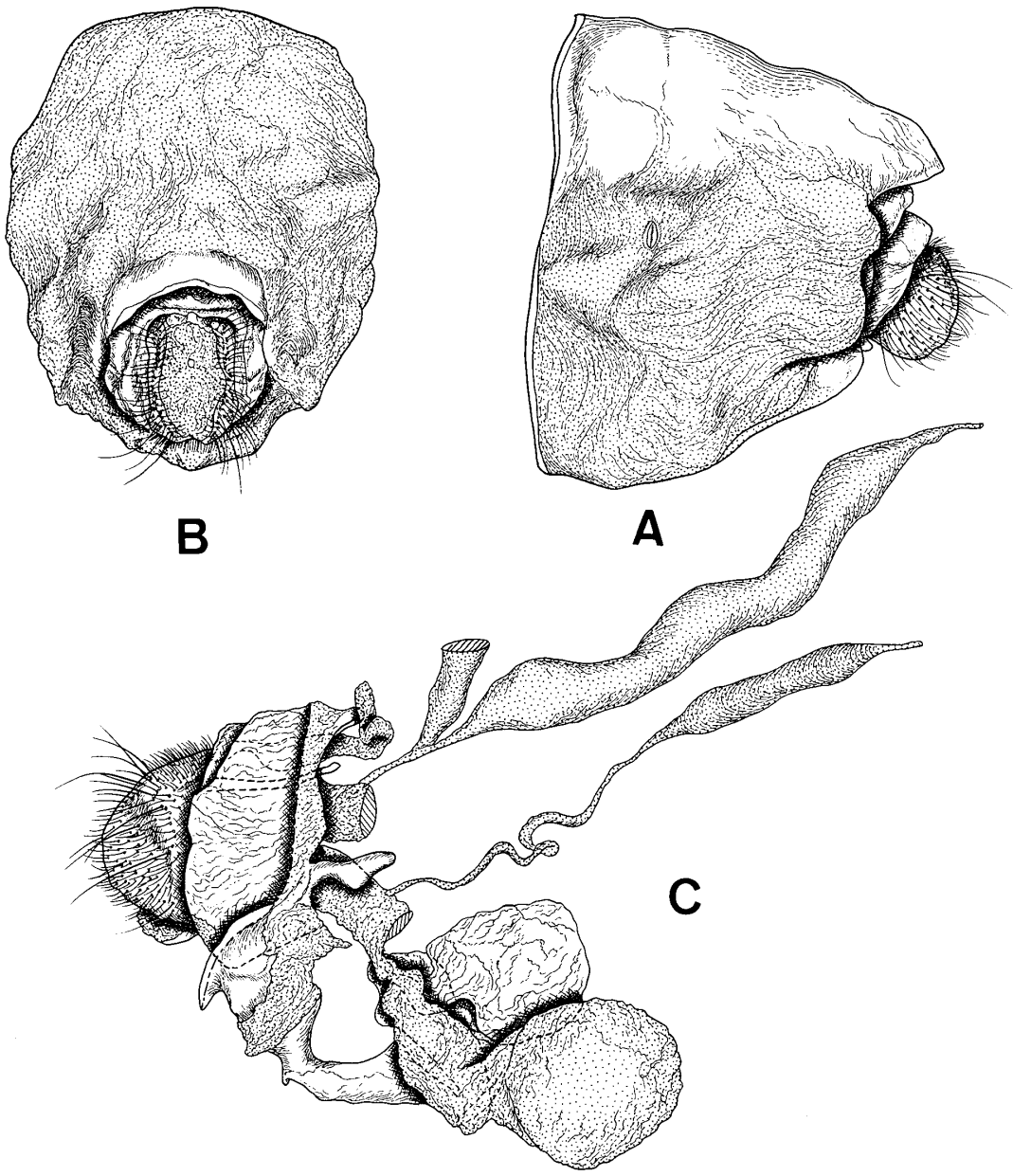

Fig. 69. Female external genitalia and internal reproductive organs of *Thanatarctia stigmata* (MOORE). A. External genitalia in lateral view; B. *Ditto* in postero-ventral view; C. Internal reproductive organ in lateral view (right).

4. *Thanatarctia imparilis* (BUTLER, 1877) **comb. nov.** (Figs. 64, 67, 109E, F)
Spilarctia imparilis BUTLER, 1877, *Ann. Mag. nat. Hist.* (4) **20**: 394.
Distribution: China and Japan (Hokkaido, Honshu, Shikoku, Kyushu and Tsushima Is.).
5. *Thanatarctia inaequalis* (BUTLER, 1879) **comb. nov.** (Figs. 63, 65, 68, 109G, H)
Spilarctia inaequalis BUTLER, 1879, *Ann. Mag. nat. Hist.* (5) **4**: 351.
Distribution: Ussuri, Amur and Japan (Honshu, Shikoku, Kyushu and Tsushima Is.).

6. *Thanatarctia infernalis* BUTLER, 1877 (Figs. 66, 110A, B)
   Thanatarctia infernalis BUTLER, 1887, *Ann. Mag. nat. Hist.* (4) **20**: 395.
   Distribution: China and Japan (Hokkaido, Honshu and Kyushu).
7. *Thanatarctia jankowskii* (OBERTHÜR, 1881) **comb. nov.** (Fig, 109D)
   Spilosoma jankowskii OBERTHÜR, 1881, *Etud. Entom.* **5**: 31, pl. 8, fig.3.
   Distribution: Amur and West China.
8. *Thanatarctia multivittata* (MOORE, 1865) **comb. nov.** (Fig. 110C, D)
   Spilosoma multivittata MOORE, 1865, *Proc. zool. Soc. Lond.* **1865**: 808.
   Distribution: Nepal, Sikkim, Assam and West China.
9. *Thanatarctia obliquivitta* (MOORE, 1879) **comb. nov.** (Fig. 110E, F)
   Spilarctia obliquivitta MOORE, 1879, Lepid. Atkins.: 40, pl.2, fig.26.
   Distribution: India, Nepal, Sikkim and West China.
10. *Thanatarctia punctilinea* (WILEMAN, 1910) **comb. nov.** (Fig. 110G)
    Diacrisia punctilinea WILEMAN, 1910, *Entomologist* **43**: 245.
    Distribution: Taiwan.
11. *Thanatarctia rhodophila* (WALKER, 1864) **comb. nov.** (Fig. 110H)
    Spilosoma rhodophila WALKER, 1864, List. Specimen lepid. Insects Colln Br. Mus. 31: 294.
    Distribution: Nepal, Sikkim, Assam, North Burma and West China.
12. *Thanatarctia rubitincta* (MOORE, 1865) **comb. nov.** (Fig. 111A, B)
    Spilosoma rubitincta MOORE, 1865, *Proc. zool. Soc. Lond.* **1865**: 809.
    Distribution: Nepal, Sikkim, Bhutan and West China.
13. *Thanatarctia stigmata* (MOORE, 1865) **comb. nov.** (Figs. 69, 111C, D)
    Spilosoma stigmata MOORE, 1865, *Proc. zool. Soc. Lond.* **1865**: 809.
    Distribution: Tibet, Nepal, Bhutan, Sikkim, West China and Taiwan.
14. *Thanatarctia ukona* (MATSUMURA, 1930) **comb. nov.**
    Diacrisia ukona MATSUMURA, 1930, *Ins. Mats.* **5** (1, 2): 35.
    Distribution: Taiwan.

4.1.6.8 Genus ***Amsactoides*** MATSUMURA, 1927

Amsactoides MATSUMURA, 1927, *J. Coll. Agric. Hokkaido imp. Univ.* **19** (1): 53. Type species: *Creatonotos formosae* STRAND, 1915, by original designation.
C. formosae is a junior subjective synonym of *Diacrisia solitalia* WILEMAN, 1910.

Male external genitalia: Tegumen developed; anterior and posterior parts of tegumen continuous to each other; pedunculus short; acrotergite well developed, and its posterior portion strongly elongated posteriorly. Fenestrula and lateral membranous slits absent. Uncus rather long, swollen dorsally at basal 2/3, with sharply pointed tip. Vinculum rather narrow, 2/3 as deep as ring; saccus moderately long, 1/2 as long as height of ring. Valva rather small, strongly constricted ventrally at subbasal portion; costa very narrow; harpe+ampulla large, its apical portion produced to form a complicated process; anellifer occupying basal 2/3 of inner wall; sacculus rather wide and continuous to ventroproximal portion of harpe+ampulla, with sparse

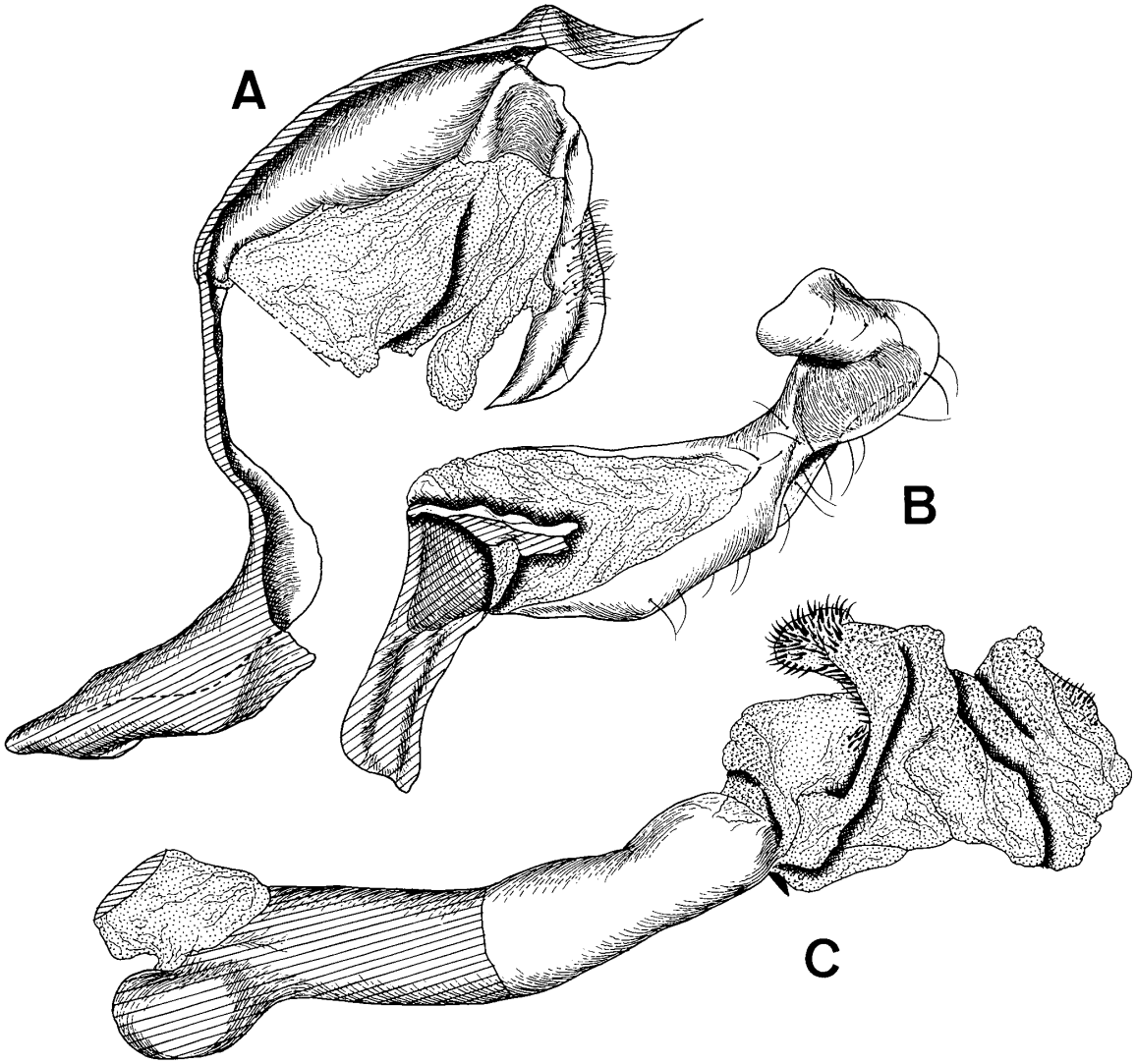

Fig. 70. Male external genitalia of *Amsactoides solitaria* (WILEMAN). A. Ring in lateral view; B. Inside of right valva; C. Phallus in lateral view.

short hairs; transtilla moderately wide. Juxta in ventral view nearly trapezoid, with emarginate apical margin. Phallus moderately long; suprazonal sheath slightly curved dorsally, with a short spine on ventrodistal portion of aedeagus; subzonal sheath 1/2 as long as aedeagus; coecum penis developed; vesica moderately large, everted distally, 3/5 as long as aedeagus, with 2 groups of many short spines and dense minute spinules between them on dorsal surface of distal 1/2 of vesica.

This genus seems to be related to the genus *Thanatarctia* but is different in the much expanded acrotergite of the male tegumen, the presence of coremata and absence of dense short hairs of the female 7th abdominal segment. But I could not find the apomorphic character present only in this genus, so strict phylogenetic position of this genus is not determined.

This genus includes only the following type species.

1. *Amsactoides solitaria* (WILEMAN, 1910) (Figs. 70, 111E, F)
   Diacrisia solitaria WILEMAN, 1910 *Entomologist* **43**: 245.
   Distribution: East China and Taiwan.

4.1.6.9 Genus ***Amsacta*** WALKER, 1855

Amsacta WALKER, 1855, List Specimens lepid. Insects Colln Br. Mus. 4: 804. Type species: *Amsacta marginalis* WALKER, 1855, by monotypy.

Aloa WALKER, 1855, List Specimens lepid. Insects Colln Br. Mus. 3: 699. Type species: *Phalaena lactinea* CRAMER, 1777, by subsequent designation by MOORE, [1883], Lepid. Ceylon 2: 74.

Male external genitalia: Tegumen very long and rather narrow, separated into strongly sclerotized anterior part and weakly sclerotized posterior part; middle portion of diaphragma weakly sclerotized and continuous to ventral portion of posterior part of tegumen; pedunculus very short; acrotergite well developed and folded on the base of tegumen posteriorly in dorsal view. Fenestrula and lateral membranous slits absent. Uncus moderately large nearly straight, posterior portion tapered to apical portion which is bifurcate into a pair of weakly pointed tips. Vinculum narrow, 1/2 as deep as ring; saccus rather small, 1/7 as long as height of ring. Valva rather wide strongly emarginate ventrally, dilating beyond the middle, then truncate apically; subdivision of inner wall indistinct; costa very narrow and long; harpe+ampulla represented by slender marginal sclerotization of apical 1/2 of valva; anellifer occupying most of inner wall; sacculus rather broad, with dense short spines on its ventral surface. Juxta rather wide, broad at base, weakly constricted at basal 1/3, with emarginate apical margin. Phallus rather narrow and short; suprazonal sheath weakly curved dorsally, without carina penis; subzonal sheath 2/5 as long as aedeagus; coecum penis slightly developed; dorsal and ventral perivesical area developed; vesica simple, everted posterodorsally, 3/5 as long as aedeagus, with many short spines.

Female external genitalia: Seventh abdominal tergum well sclerotized and large; 7th sternum much reduced to a posterior sclerotization so that most of ventral region of the segment is almost membranous; in addition to the above sclerotization, there is a large sclerotized circular-shaped sclerite present on posteroventral area of 7th segment. Eighth abdominal segment 1/4 as high as 7th segment; 8th abdominal tergum completely fused with its sternum, with several longitudinal furrows on its lateral surface. Lamella antevaginalis very wide, laterally completely fused with lamella postvaginalis, weakly curved dorsally, with several vertical furrows on its ventral surface; lamella postvaginalis rather wide and concaved anteriorly. Ostium bursae lenticular. Apophysis anterioris short, wealky curved anterodorsally, 1/6 as long as height of 8th segment. Papilla analis large and semicircular in lateral view, with many short and several long hairs; apophysis posterioris 3 × as long as apophysis anterioris.

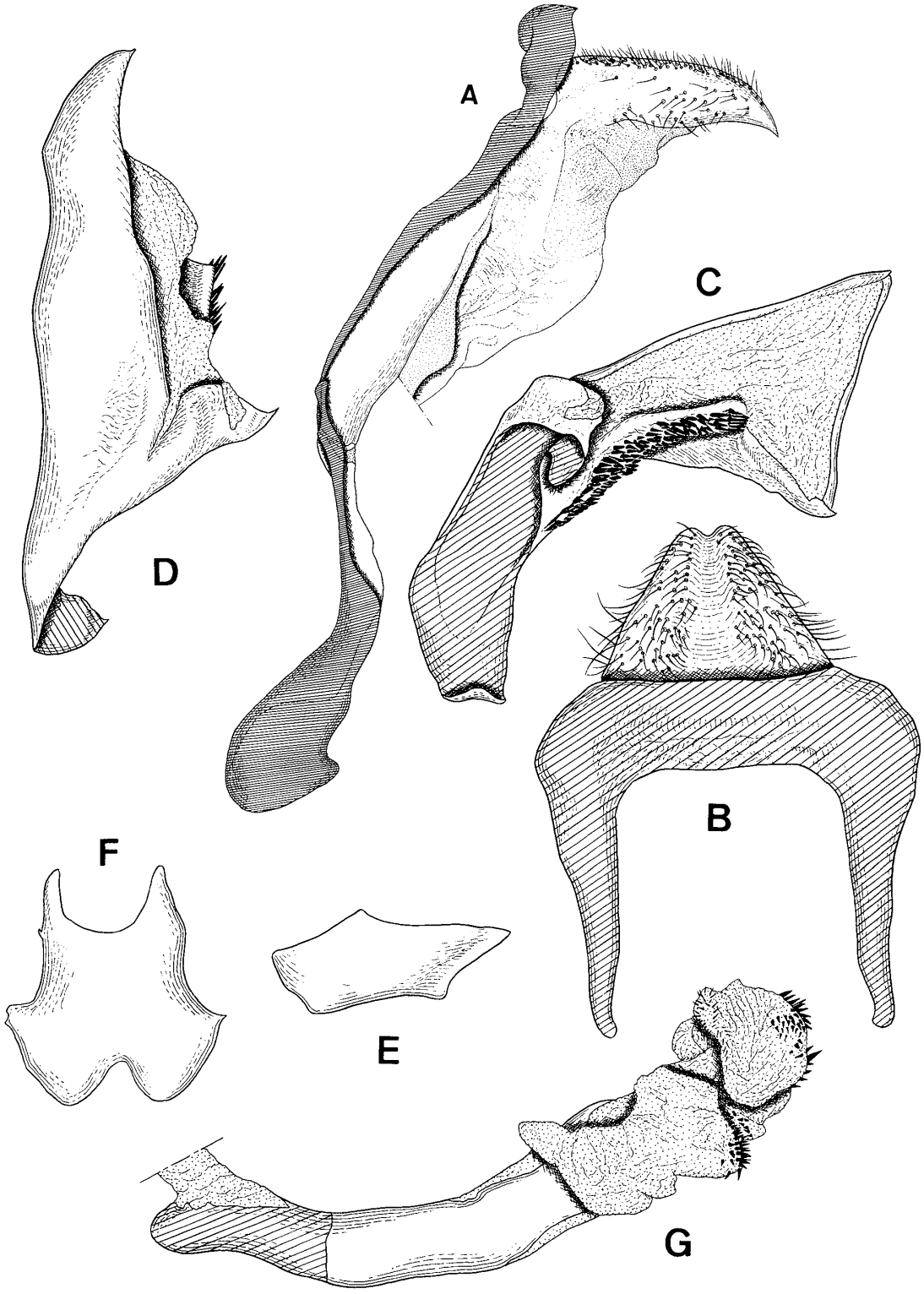

Fig. 71. Male external genitalia of *Amsacta lactinea* (CRAMER). A. Ring in lateral view ; B. Dorsum in dorsal view ; C. Inside of right valva ; D. *Ditto* in dorsal view ; E. Juxta in lateral view ; F. *Ditto* in ventral view ; G. Phallus in lateral view.

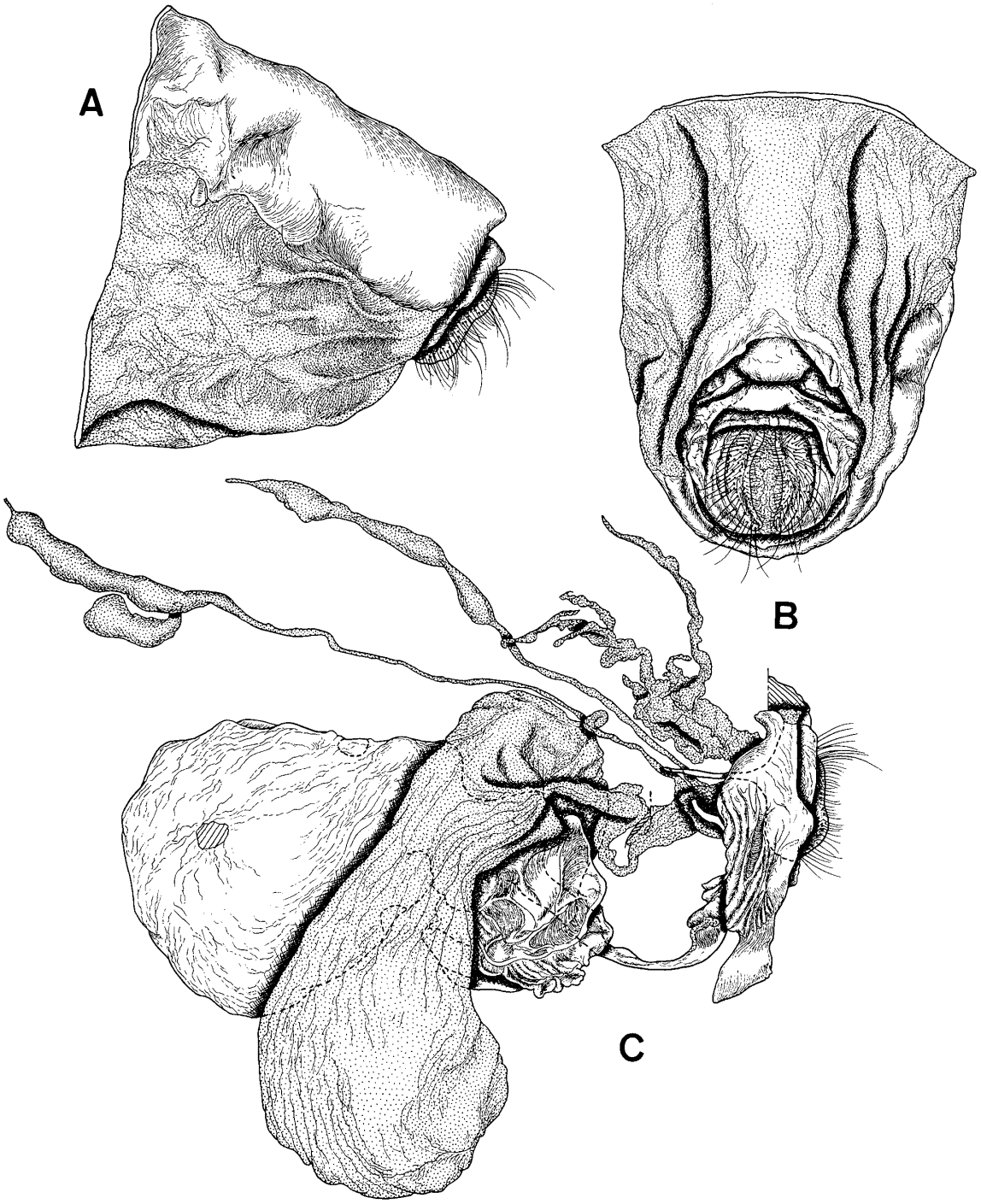

Fig. 72. Female external genitalia and internal reproductive organs of *Amsacta lactinea* (CRAMER). A. External genitalia in lateral view; B. *Ditto* in posteroventral view; C. Internal reproductive organs in lateral view (left).

Female internal reproductive organs: Anterior end of bursa copulatrix reaching to posterior 2/3 of 6th segment. Antrum short; a narrow membranous slit present between antrum and ductus bursae. Ductus bursae rather long, 1/4 as long as bursa copulatrix, curved ventrally near ostium, then directing anterodorsally, and attached

to right lateral side of cervix bursae. Cervix bursae large and sclerotized, with many complicated furrows on its entire surface. Corpus bursae membranous and globular, 1/2 as long as bursa copulatrix; signa are represented by a pair of circular plates bearing some small spinules. Lower part of ductus seminalis arising from posterior 1/3 of right lateral side of cervix bursae, curved dorsally, extending and continuing to bulla seminalis; bulla seminalis very large and pyriform, 4/5 as long as bursa copulatrix, curving clock-wise above base of corpus bursae and extending antero-ventrally; upper part of ductus seminalis arising from dorsal 1/4 of left lateral side of bulla seminalis and attached to ventral surface of vestibulum. Spermatheca rather small and allantoid. Glandula sevacea rather short and slender, 1/2 as long as bursa copulatrix. Scent gland very complicated as illustrated.

This genus seems to be related to the following two genera, and these three genera are characterized by the following synapomorphies: Tip of male uncus bifurcate; sacculus of male valva well developed.

This genus is characteristic in having dense short spines of sacculus of the male valva.

I examined the genitalia of the following species.

1. *Amsacta cardinalis* (BUTLER, 1875) (Fig. 111G, H)
   Areas cardinalis BUTLER, 1875, *Cist. Ent.* **2**: 22.
   Distribution: Philippines, Celebes and Timor.
2. *Amsacta lactinea* (CRAMER, 1777) (Figs. 71, 72, 112A, B)
   Phalaena lactinea CRAMER, 1777, Uitlandshe Kapellen (Papillons exot.) 2: 58, 149, pl.133, fig. D.
   Distribution: Oriental Region.

4.1.6.10 Genus ***Areas*** WALKER, 1855

Areas WALKER, 1855, List Specimens lepid. Insect Colln Br. Mus. 3: 658. Type species: *Areas orientalis* WALKER, 1855, by monotypy.
A. orientalis is a junior subjective synonym of *Chelonia galactina* HOEVEN, 1840, *Tijdschr. nat. Gesch. Phys.* **7**: 280, pl.6, fig. 5.

Melanareas BUTLER, 1889, Illust. typical Specimens Lepid. Heterocera Colln Br. Mus. 7: 4, 29. Type species: *Euprepia imperialis* KOLLER, [1844], by monotypy, **syn. nov.**

Male external genitalia: Tegumen well developed; anterior and posterior parts of tegumen continuous to each other; pedunculus very short; acrotergite well developed and folded on the base of the tegumen; appendix angularis developed, broad and produced posteroventrally. Fenestrula and lateral membranous slits absent. Uncus well developed, swollen dorsally, clothed with many short hairs; apical margin of uncus strongly excavated, so that uncus bifulcated in posterior view. Vinculum slender, 1/2 as deep as ring; saccus rather long and slender, 1/3 – 2/5 as long as height of ring. Valva nearly rectangular, narrowed ventroproximally truncate or weakly bifurcate distally; costa linear, and continuous to ampulla region; anellifer very wide, occupying almost of inner wall, sacculus well developed, broad, and occupying ventral

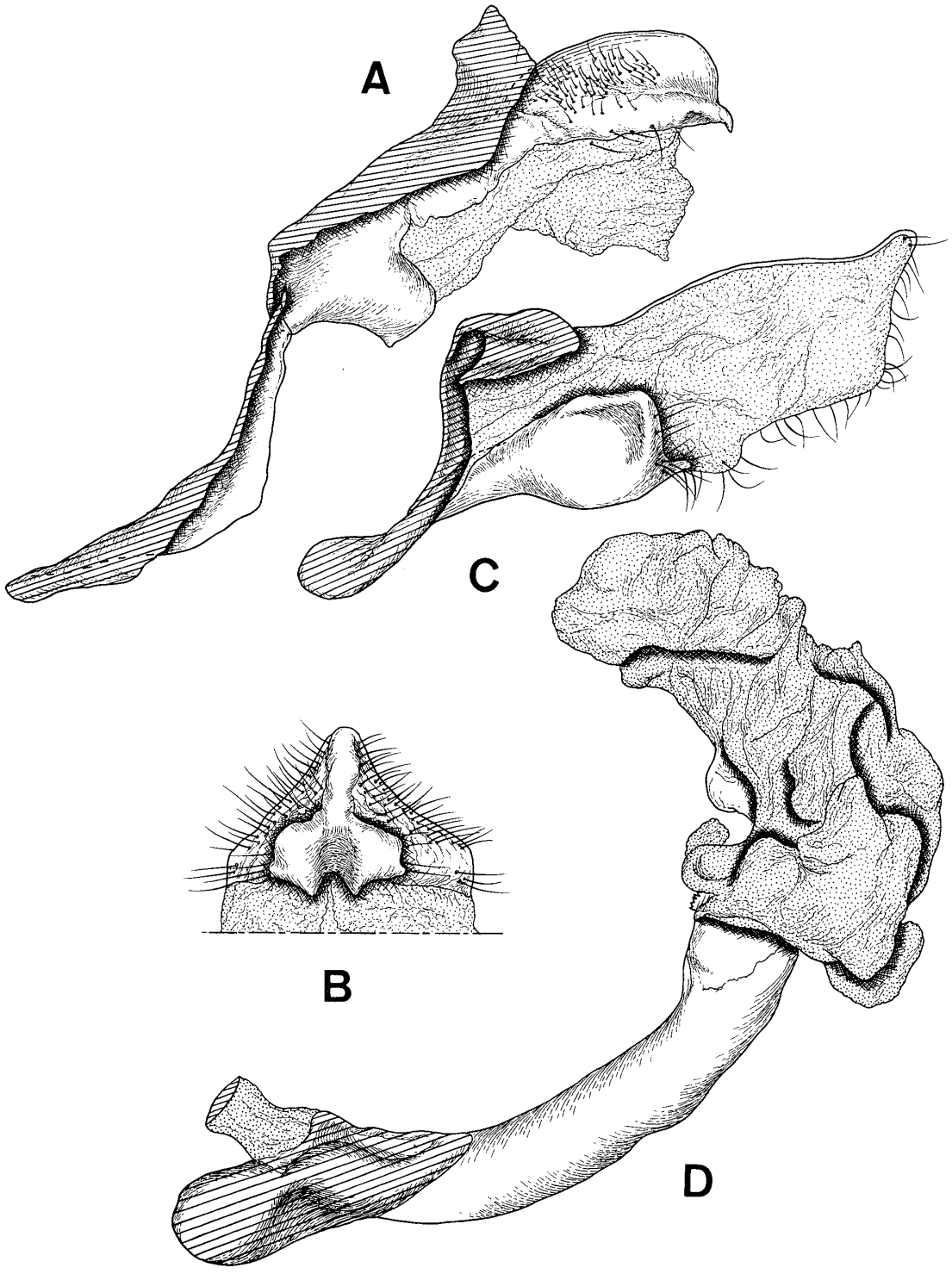

Fig. 73. Male external genitalia of *Areas galactina* (HOEVEN). A. Ring in lateral view ; B. Uncus in posterior view ; C. Inside of right valva ; D. Phallus in lateral view.

1/2 of basal portion, with several hairs ; transtilla wide. Juxta nearly trapezoid, with concaved lateral sides. Phallus large ; suprazonal sheath weakly curved dorsally, with serrate carina penis on right side of distal portion ; subzonal sheath 2/5 as long as aedeagus, with a keel ventrally ; coecum penis developed ; vesica large, everted

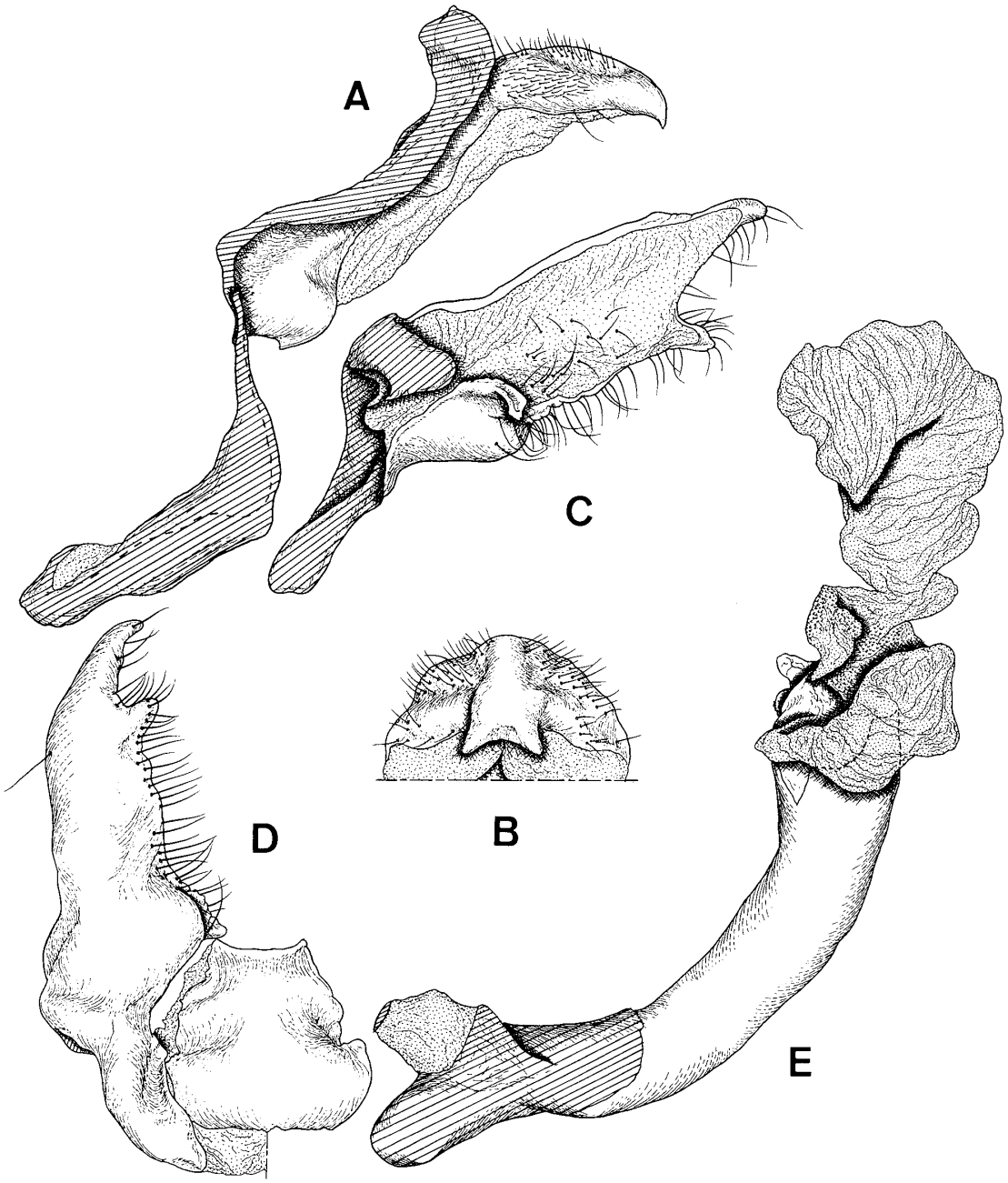

Fig. 74. Male external genitalia of *Areas imperialis* (KOLLER). A. Ring in lateral view ; B. Uncus in posterior view ; C. Inside of right valva ; D. Left valva and juxta in ventral view ; E. Phallus in lateral view.

dorsally, 3/4 as long as aedeagus, with a plate-like sclerite.

Female external genitalia : Seventh abdominal tergum large ; 7th sternum absent in normal position, so that venter of this segment almost membranous except a large tongue－shaped sclerite developed on posteroventral area of 7th abdominal segment. Eighth abdominal segment 1/4 as high as 7th segment ; 8th abdominal tergum completely fused with its sternum, its ventral portion weakly produced posteriorly. A pair of large sclerites, each of which form a regular deep round concavity, present on

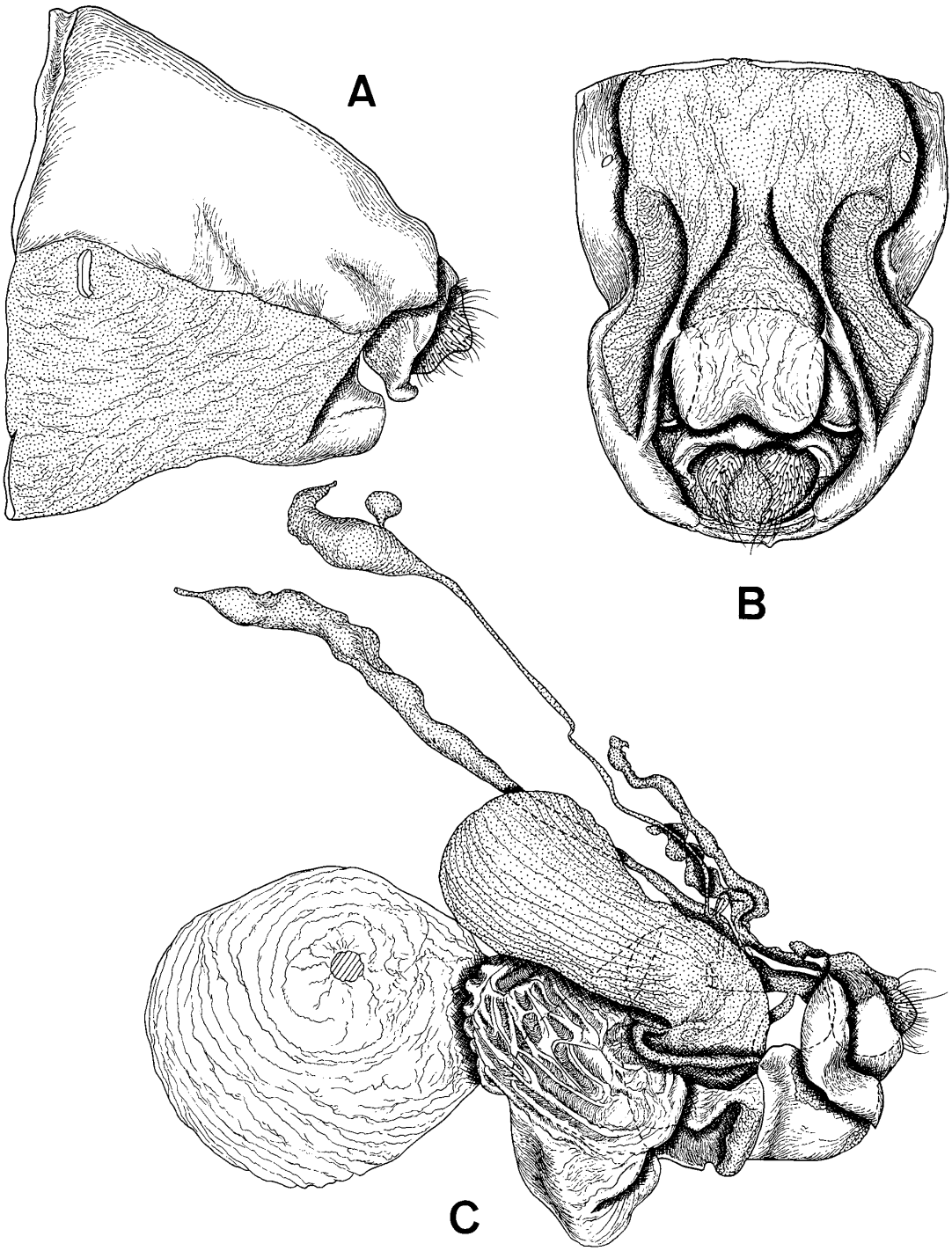

Fig. 75. Female external genitalia and internal reproductive organs of *Areas galactina* (HOEVEN). A. External genitalia in lateral view ; B. *Ditto* in posteroventral view ; C. Internal reproductive organs in lateral view (left).

each side of ostium. Lamella antevaginalis very wide, completely fused with lamella postvaginalis laterally. Ostium bursae lenticular. Apophysis anterioris very short, 1/5 as long as height of 8th segment, situated on subdorsal portion of 8th tergum. Papilla

analis triangular in lateral veiw, with many short hairs; apophysis posterioris situated just bellow apophysis anterioris, 4 × as long as apophysis anterioris.

Female internal reproductive organs: Anterior end of bursa copulatrix reaching posterior 1/3 of 6th segment. Antrum rather wide, with membranous area on its dorsodistal portion. Ductus bursae short and thick, 1/6 as long as bursa copulatrix, its ventral surface strongly concaved, posterior 1/4 of ventral 2/3 membranous. Cervix bursae very large and sclerotized, with many complicated furrows on its dorsal 2/3. Corpus bursae membranous and globular, 1/2 as long as bursa copulatrix; signa represented by a pair of circular plates bearing some small spinules. Lower part of ductus seminalis attached to right ventral side of cervix bursae, extending posterodorsally through lateral side of cervix bursae and attached to middle portion of right lateral side of bulla seminalis; bulla seminalis very large, 1/2 as long as bursa copulatrix, situated above cervix bursae; upper part of ductus seminalis very narrow, arising from posterior 1/4 of left ventral side of bulla seminalis, strongly curved posteriorly, directing to posteroventrally and turning to anteriorly at the level of posterior end of bulla seminalis, then extending posterodorsally and attached to ventral surface of vestibulum. Spermatheca small. Glandula sebacea long and narrow, subequal in length to bursa copulatrix. Scent gland rather long, with a long branch.

This genus has the following autapomorphies: Apendix angularis of male tegumen well developed; sucullus of male valva broad.

This genus includes the following two species.

1. *Areas galactina* (HOEVEN, 1840) (Figs. 73, 75, 112C, D)
   Chelonia galactina HOEVEN, 1840, *Tijdschr. nat Gesch. Phys.* **7**: 280, pl.6, fig. 5.
   Distribution: Oriental Region.
2. *Areas imperialis* (KOLLAR,[1844]) (Figs. 74, 112E, F)
   Euprepia imperialis KOLLAR,[1844], in HUGEL, Kaschmir und das Reich der Seik 4: 466, pl.21, fig. 1.
   Distribution: Nepal, Sikkim and West China.

4.1.6.11 Genus ***Alphaea*** WALKER, 1855

Alphaea WALKER, 1855, List Specimens lepid. Insects Colln Br. Mus. 3: 683. Type species: *Alphaea fulvohirta* WALKER, 1855 by monotypy.

Nayaca MOORE, 1879, in HEWITSON & MOORE, Descr. new Indian lepid. Insects Colln late Mr. W.S. ATKINSON (1): 43. Type species: *Arctia imbuta* WALKER, 1855, by original designation.

Male external genitalia: Tegumen moderately long; anterior and posterior parts of tegumen continuous to each other; in *imbuta* posterosubventral part of tegumen strongly produced posteriorly, with seration on its margin; posteroventral portion of tegumen weakly or strongly produced posteriorly; pedunculus short; acrotergite well developed and folded on the base of tegumen. Fenestrula and lateral membranous slits absent. Uncus moderately long, clothed with short hairs, apical portion tapered and weakly curved ventrally, with pointed tip. Vinculum short and slender, 1/2 – 3/5 as

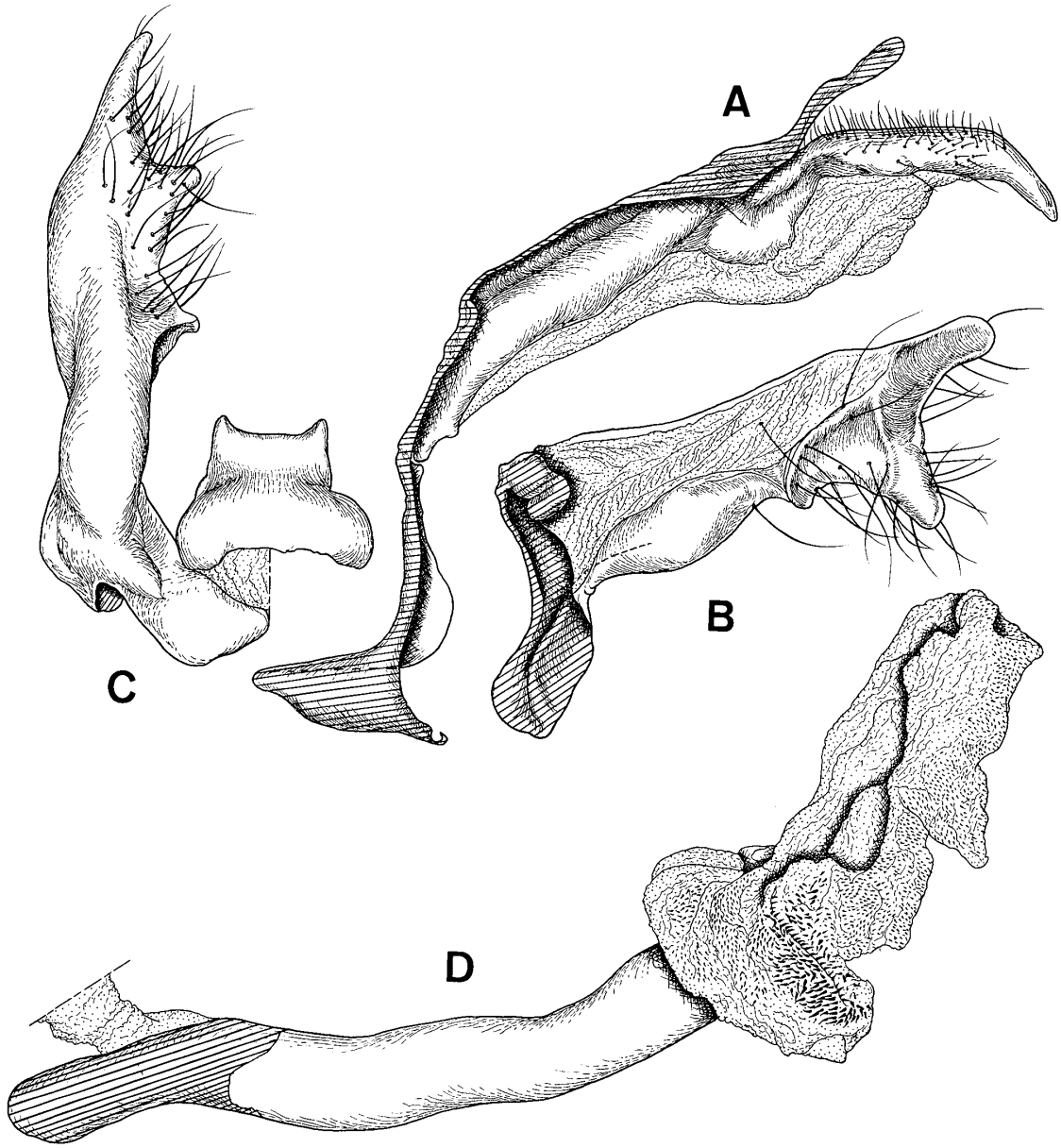

Fig. 76. Male external genitalia of *Alphaea fulvohirta* WALKER. A. Ring in lateral view; B. Inside of right valva; C. Left valva and juxta in ventral view; D. Phallus in lateral view.

deep as ring; saccus 1/3－2/5 as long as height of ring. Valva moderately large; subdivision of valva indistinct in *impleta*; costa very long and slender; harpe+ampulla produced apically into two processes and clothed with many long hairs, in *impleta* inner wall of harpe+ampulla region almost membranous; anellifer very wide and long, occupying most of inner wall of valva in *impleta*, but in *fulvohirta* occupying basal 2/3 of its dorsal portion; ventroproximal portion of harpe+ampulla continuous to sacculus and produced to form a wedge-shaped process inwardly; sacculus well developed and large, swollen at the middle; transtilla moderately wide. Juxta nearly trapezoid, with concaved sides. Phallus long; suprazonal sheath weakly curved

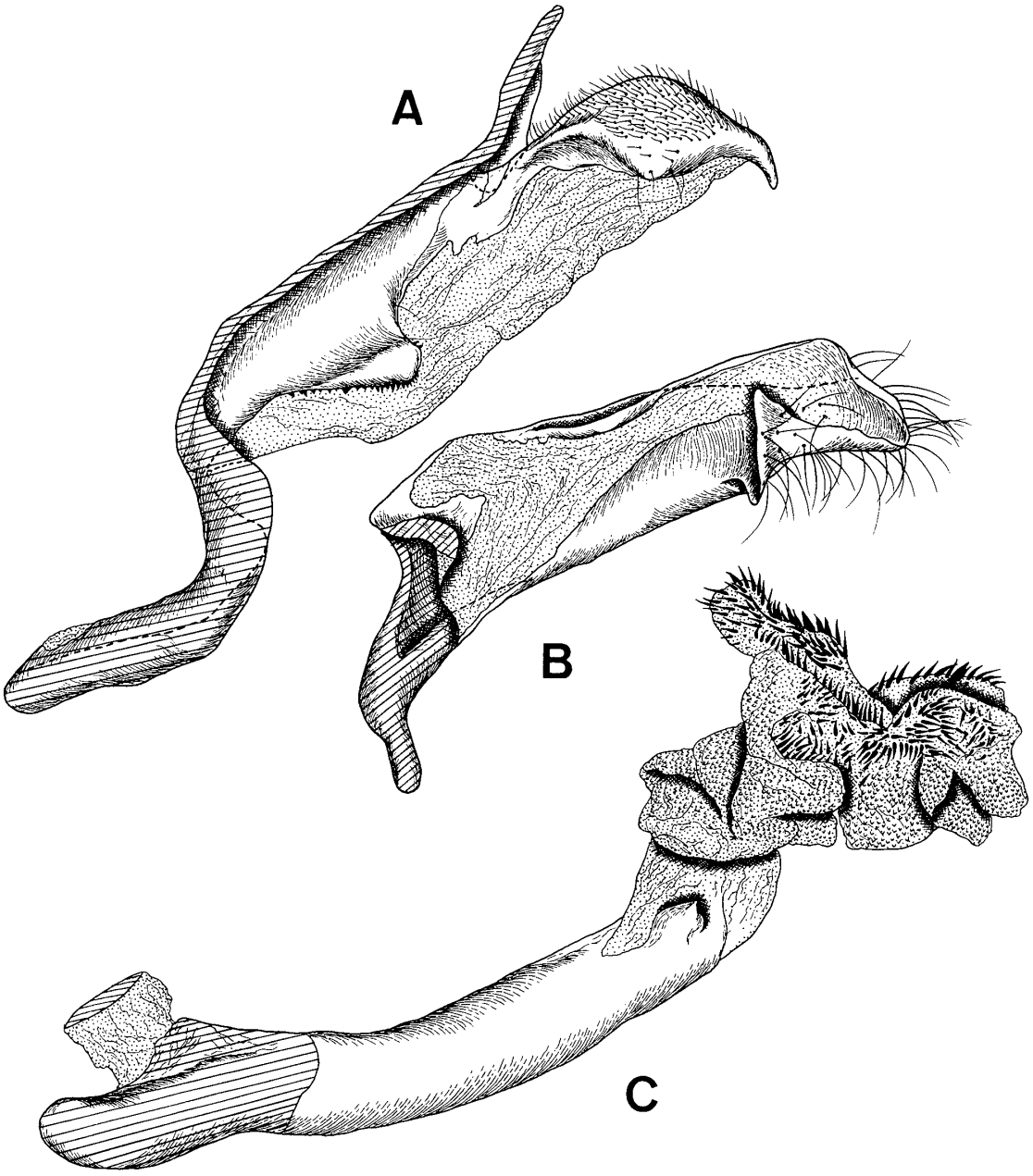

Fig. 77. Male external genitalia of *Alphaea imbuta* (WALKER). A. Ring in lateral view ; B. Inside of right valva ; C. Phallus in lateral view.

dorsally, without carina penis ; subzonal sheath 1/3－2/5 as long as aedeagus, with weak keel ventrally in *impleta* ; coecum penis developed ; vesica long, 3/4 as long as aedeagus, everted dorsally, with dense minute spinules.

This genus seems to be closely related to *Argyarctia*. These two genera are characterized by a wedge-shaped process between sacculus and harpe＋ampulla of the male valva. But this genus is distinctive in having small posterosubventral projections of the male tegumen.

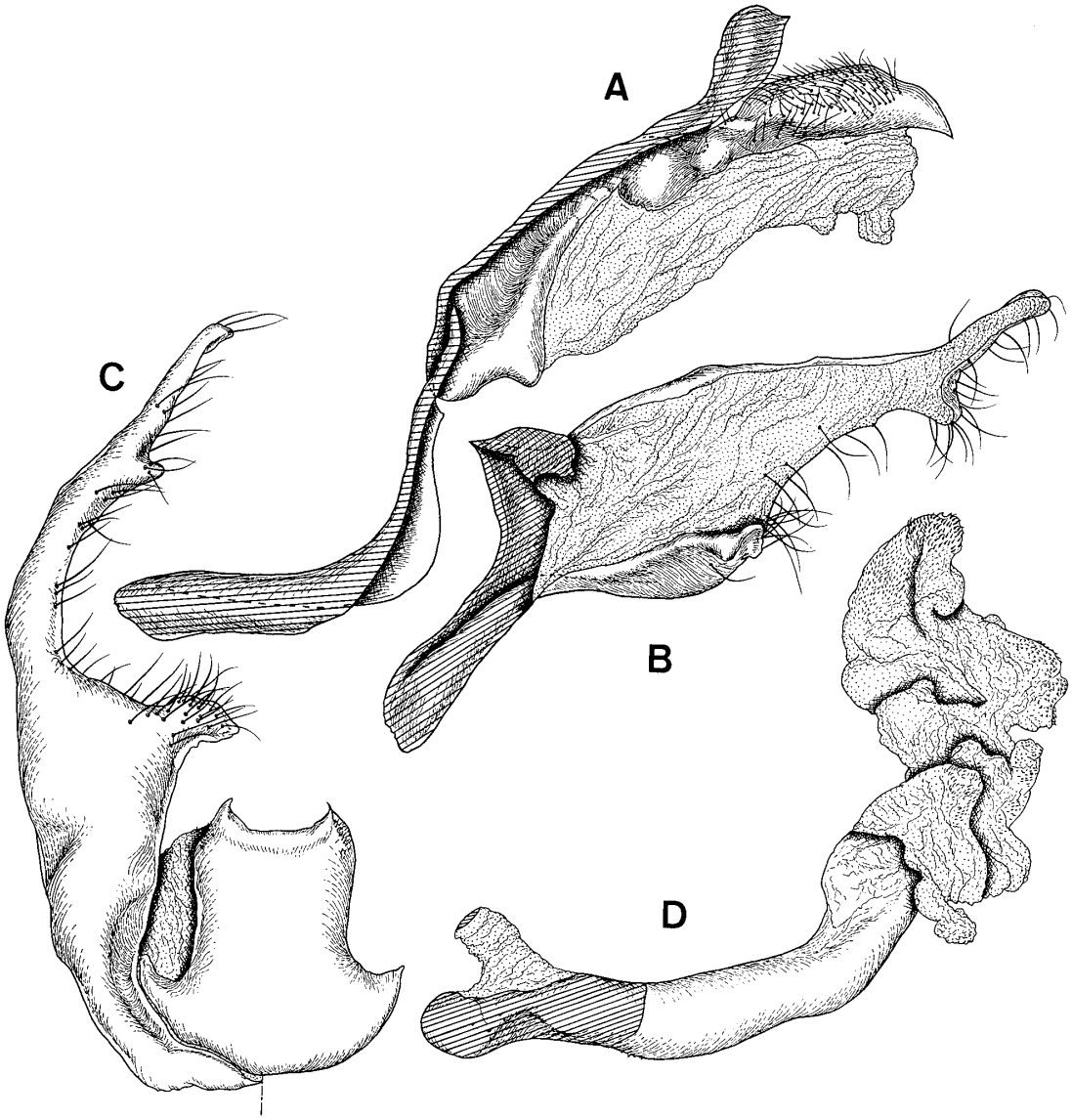

Fig. 78. Male external genitalia of *Alphaea impleta* (WALKER). A. Ring in lateral view ; B. Inside of right valva ; C. Left valva and juxta in ventral view ; D. Phallus in lateral view.

I examined the male genitalia of the following species.

1. *Alphaea fulvohirta* WALKER, 1855 (Figs. 76, 112G)
   Alphaea furvohirta WALKER, 1855, List Specimens lepid. Insects Colln Br. Mus. 3 : 683.
   Distribution : Nepal, Sikkim, Bhutan, Assam and West China.
2. *Alphaea imbuta* (WALKER, 1855) (Figs. 77, 112H)
   Arctia imbuta WALKER, 1855, List Specimens lepid. Insects Colln Br. Mus. 3 : 614.
   Distribution : Nepal, Sikkim, Bhutan and Assam.
3. *Alphaea impleta* (WALKER, 1864) (Figs. 78, 113A)
   Hypercompa impleta WALKER, 1864, List Specimens Lepid. Insects Colln Br. Mus. 31 : 286.

Distribution: Nepal, Sikkim, Assam and West China.

4.1.6.12 Genus *Argyarctia* KÔDA, gen. nov.

Type species: *Diacrisia fuscobasalis* MATSUMURA, 1930.

Head: Frons at middle 1/3 as wide as head, with moderately long rough scales. Labial palpus weakly upturned, its tip reaching to 2/5 level of frons, and weakly projecting forward (0.24 × head length) beyond head; length of labial palpus subequal to head length; 1st segment 1.1 × as long as 2nd; 3rd segment 4/5 as long as 2nd. Maxillary palpus very small and rounded. Antenna 0.4 × as long as fore wing; flagellum bipectinate, consisting of 48–50 segments; ratio of length to width of 1st flagellomere 0.9, middle ones 1.3, apical one 5.0; anterior pectination of basal (2nd) flagellomere 0.63 ×, middle ones 1.5 × as long as width of the shaft; posterior pectination of basal (1st) flagellomere 1.9 ×, middle ones 2.6 × as long as width of the shaft.

Legs. Fore leg: Trochanter 2/5 as long as tibia; tibia 2/3 as long as femur; tarsus 1.6 × as lang as tibia; claw 1/2 as long as 5th tarsomere; epiphysis 2/3 as long as tibia and situated at 1/4 from base of tibia. Mid leg: Trochanter 1/4 as long as tibia; tibia 3/4 as long as femur; anterior terminal spur 0.2 × posterior terminal spur 0.2 × as long as tibia. Hind leg: Trochanter 1/5 as long as tibia; tibia 0.96 × as long as femur; median spurs situated at 4/5 from base of tibia; anterior median spur 0.20 ×, posterior median spur 0.22 ×, anterior terminal spur 0.22 ×, posterior terminal spur 0.24 × as long as tibia.

Wing venation: Fore wing with veins, 3, 4 and 5 from lower angle of discoidal cell; 6 from upper angle; 7, 8, 9 and 10 stalked; 11 free. Hind wing with veins 3, 4 and from lower angle of discoidal cell; 6 and 7 from upper angle; 8 from middle of discoidal cell.

Male external genitalia: Tegumen moderately large; anterior and posterior parts completely united with each other; dorsal portion of anterior part strongly upheaved dorsally and forming a transeverse wall; pedunculus short; acrotergite well developed and folded on the base of tegumen posteriorly. Fenestrula and lateral membranous slits absent. Uncus well developed and large in *reikoae*, but in *fuscobasalis* slender and long. Vinculum moderately narrow, 1/2–3/5 as deep as ring; saccus 1/3 as long as height of ring. Valva moderately large; costa absent; harpe+ampulla produced into a dorsal and ventral two processes, and with sparse hairs; anellifer occupying dorsal 1/2 of basal portion of valva; sacculus broad, continuous to ventroproximal portion of harpe+ampulla and produced to form a short process inwardly. Juxta broad and rounded at base, strongly constricted at apical 1/2, which is nearly rectangular in ventral view. Phallus rather narrow and long; suprazonal sheath weakly curved dorsally, with serrate carina penis on apical portion of right lateral wall; subzonal sheath 2/5–1/2 as long as aedeagus; coecum penis developed; vesica large, 3/5 as long as aedeagus, everted posteriorly or posterodorsally, with 2 groups of sparse short

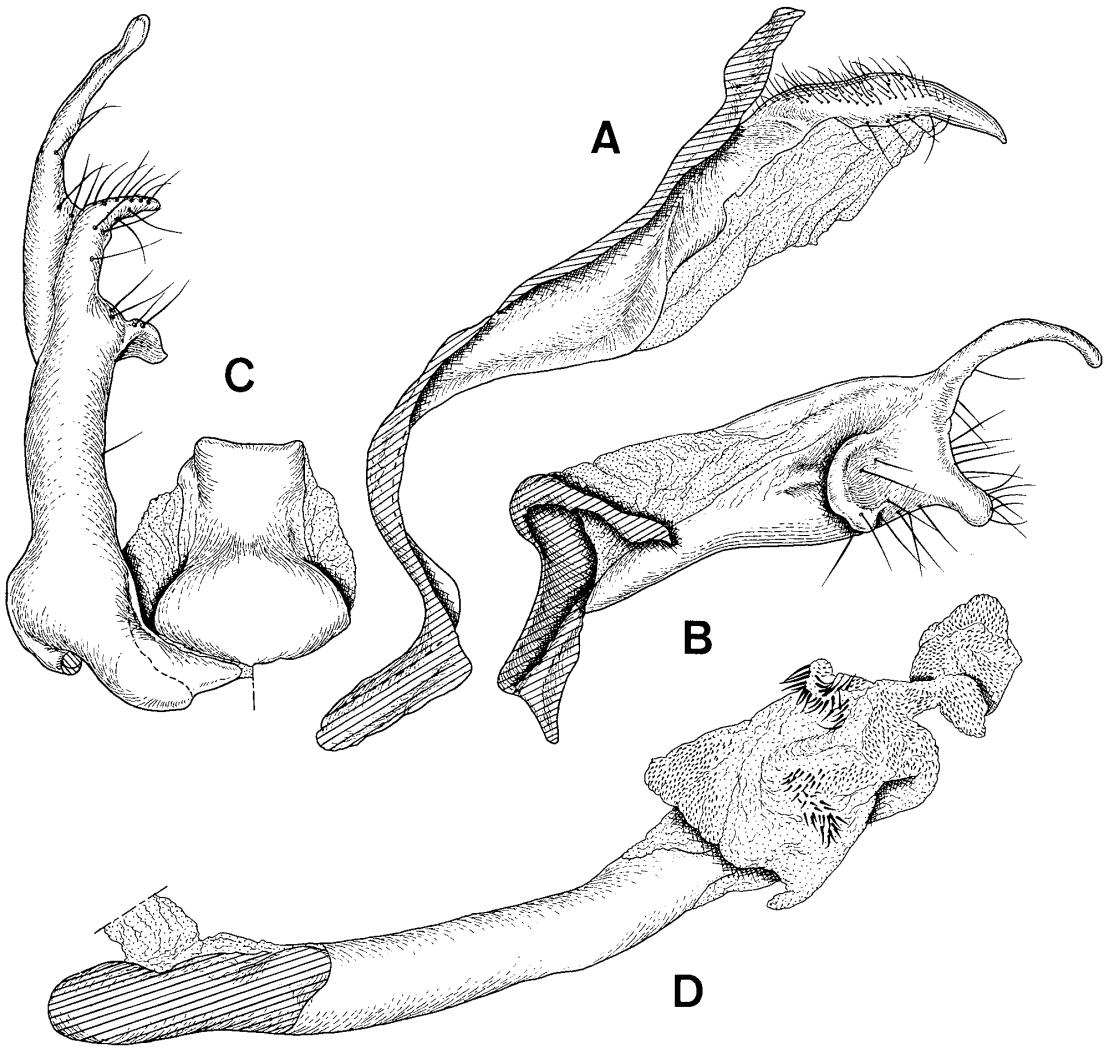

Fig. 79. Male external genitalia of *Argyarctia fuscobasalis* (MATSUMURA). A. Ring in lateral view ; B. Inside of right valva ; C. Left valva and juxta in ventral view ; D. Phallus in lateral view.

spines and 2 or 3 groups of dense minute spinules.

Female external genitalia : Seventh abdominal tergum large and well sclerotized ; 7th sternum reduced so that venter of this segment almost membranous ; a narrow rectangular sclerite (reduced 7th sternum) present on posterior portion of ventral surface of 7th segment, its middle portion weakly swelling posteroventrally. Eighth abdominal segment 1/3 as high as 7th segment ; 8th tergum and sternum separated by a membranous narrow triangular incision at the middle in lateral view. Lamella antevaginalis rather wide transeverse sclerite, its sides weakly raised, emarginate at the middle ; lamalla postvaginalis rather wide, produced posteroventrally, laterally completely fused with lamella antevaginalis. Ostium bursae oval. Apophysis anterioris short and nearly straight, 1/7 as long as height of 8th segment. Papilla analis moderately large, with many short hairs and sparse long hairs ; apophysis posterioris 2.5 × as long as apophysis anterioris.

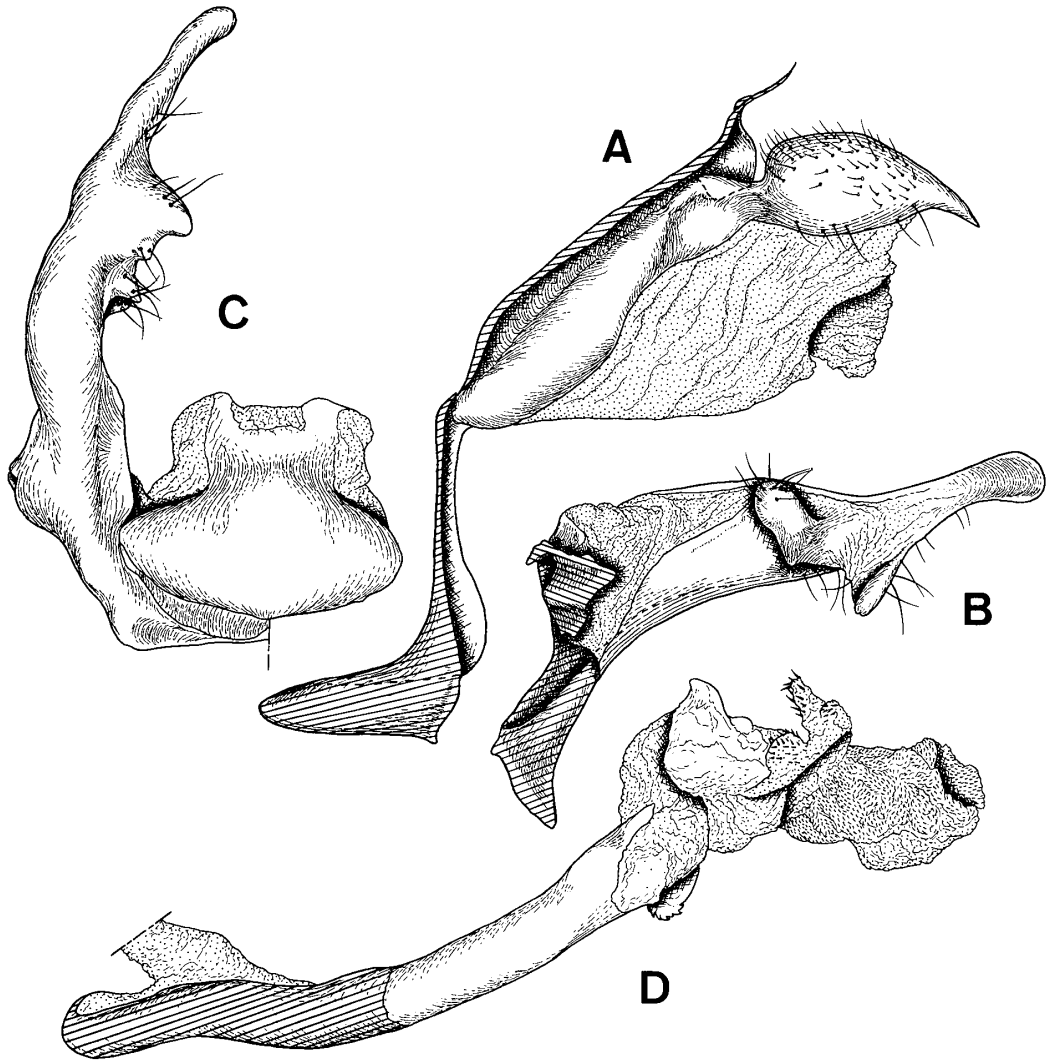

Fig. 80. Male external genitalia of *Argyarctia reikoae* (KISHIDA). A. Ring in lateral view ; B. Inside of right valva ; C. Left valva and juxta in ventral view ; D. Phallus in lateral view.

Female internal reproductive organs : Female internal reproductive organs completely involved in 7th abdominal segment. Sinus vaginalis very small. Antrum short ; a narrow membranous area present between antrum and ductus bursae. Ductus bursae very short and rather thick, 1/10 as long as bursa copulatrix. Cervix bursae large and sclerotized, with many furrows on its entire surface, attached to right lateral side of corpus bursae. Corpus bursae membranous and globular, 1/3 as long as bursa copulatrix, without signa. Lower part of ductus seminalis attached to right lateral side of cervix bursae, extending bulla seminalis ; bulla seminalis large and ovoid, situated above bursa copulatrix ; upper part of ductus seminalis arising from posterior 1/3 of left lateral side of bulla seminalis, attached to left lateral side of vestibulum. Spermatheca moderate in size, situated at the level of cervix bursae. Glandula sevacea very long, 2 × as long as bursa copulatrix, situated lateral to bursa copulatrix and extending anteriorly. Scent gland simple, its anterior 1/5 bifurcated.

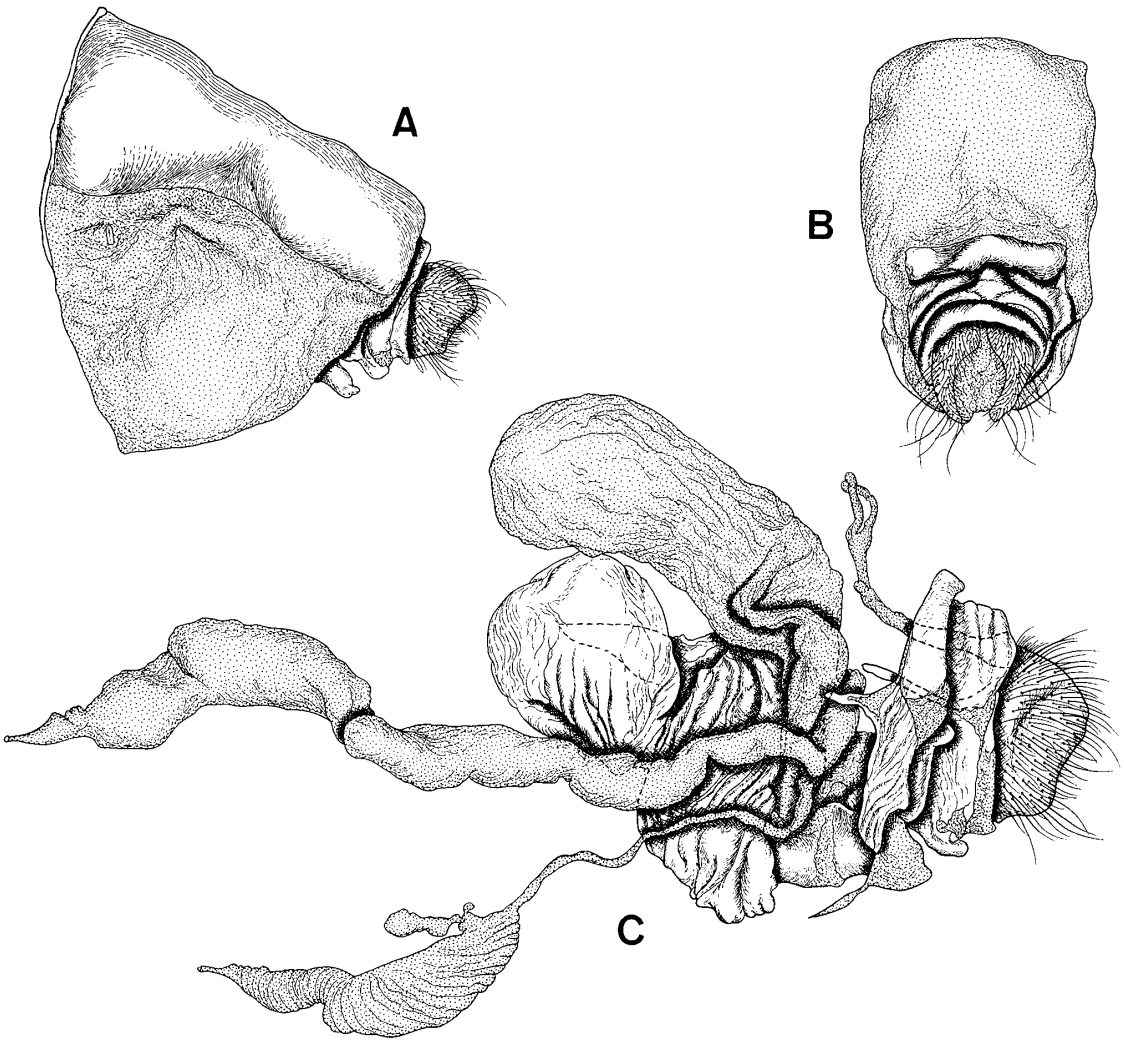

Fig. 81. Female external genitalia and internal reproductive organs of *Argyarctia reikoae* (KISHDA). A. External genitalia in lateral view ; B. *Ditto* in posteroventral view ; C. Internal reproductive organs in lateral view (left).

The genus *Argyarctia* is erected here to include two species from Taiwan, i.e., *fuscobasalis* and *reikoae*, which have hitherto been included into the genus *Spilosoma*. The overall resemblance of the wing markings between these two species and *Spilosoma* species is apparently due to symplesiomorphy.

This genus seems to be closely related to the preceding genus in the structure of the male genitalia. But this genus is different from the latter in the simple male tegumen without posteroventral projections, and in the glandula sevacea and spermatheca of female genitalia situated lateral to the bursa copulatrix.

I examined the genitalia of the following species.

1. *Argyarctia fuscobasalis* (MATSUMURA, 1930) **comb. nov.** (Figs. 79, 113B)
   Diacrisia fuscobasalis MATSUMURA, 1930, *Ins, Mats.* **5** (1, 2) : 33, pl.1, fig. 12.
   Distribution : Taiwan.

2. *Argyarctia reikoae* (KISHIDA, 1984) **comb. nov.** (Figs. 80, 81, 113C, D)
Spilosoma reikoae KISHIDA, 1984, *Tinea* **11** (23): 199–201, figs.1–3, 5.
Distribution: Taiwan.

4.1.6.13 Genus ***Creatonotos*** HÜBNER, [1819]

Creatonotos HÜBNER, [1819], Verz. bekannter Schmett.: 170. Type species: *Phalaena interrupta* LINNAEUS, 1767, subsequent designation by KIRBY, 1882, Synonymic Cat. Lepid. Heterocera 1: 241.
P. interrupta is a junior subjective synonym of *Phalaena gangis* LINNAEUS, 1763.

Creatonotus AGASSIZ, 1847, Nomencl. zool.: 103. An unjustified emendation of *Creatonotos* HÜBNER, [1819].

Amphissa WALKER, 1855, List Specimens lepid. Insects Colln Br. Mus. 3: 684. Type species: *Amphissa vacillans* WALKER, 1855, by monotypy.
A junior homonym of *Amphissa* ADAMS & ADAMS, 1853, Genera recent Mollusca 1: 111, (Mollusca).

Phissama MOORE, [1860], in HORSFIELD & MOORE, Cat. lepid. Insects Mus. nat. Hist. East-Indis House 2: 362 (established as the objective replacement name for *Amphissa* WALKER, 1855). Type species: *Amphissa vacillans* WALKER, 1855, by monotypy. *A. vacillans* is junior subjective synonym of *Spilosoma transiens* WALKER, 1855.

Male external genitalia: Tegumen slender; its anterior and posterior parts continuous to each other; pedunculus very short; acrotergite well developed and folded on the base of tegumen. Fenestrula and lateral membranous slits absent. Uncus long and slender, nearly straight, clothed with many short hairs, apical portion of uncus weakly pointed and curved ventrally. Vinculum rather slender; 1/2 as deep as ring,

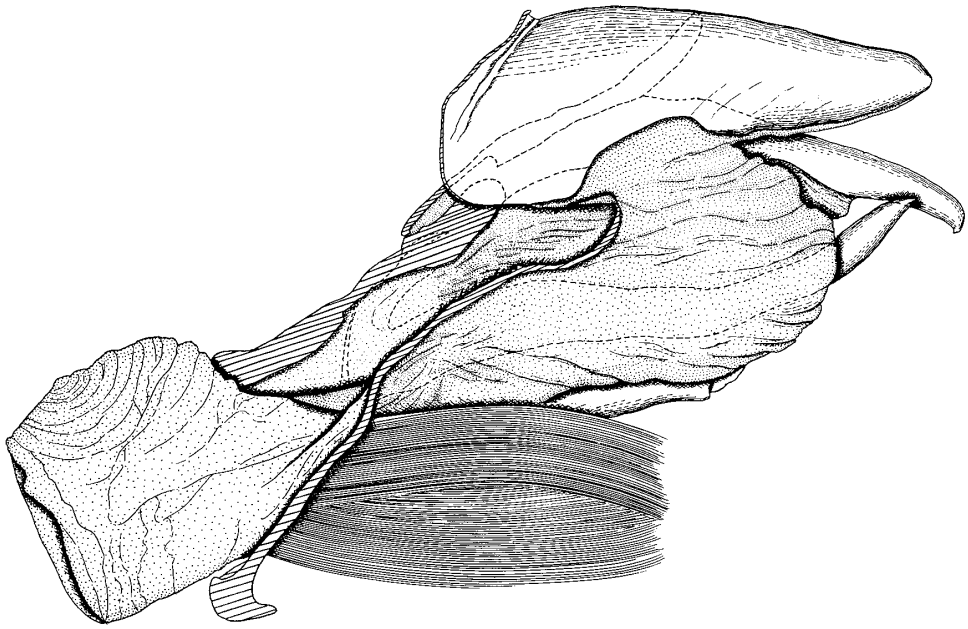

Fig. 82. Male 8th abdominal segment and whole genitalia of *Creatonotos transiens* (WALKER) in lateral view.

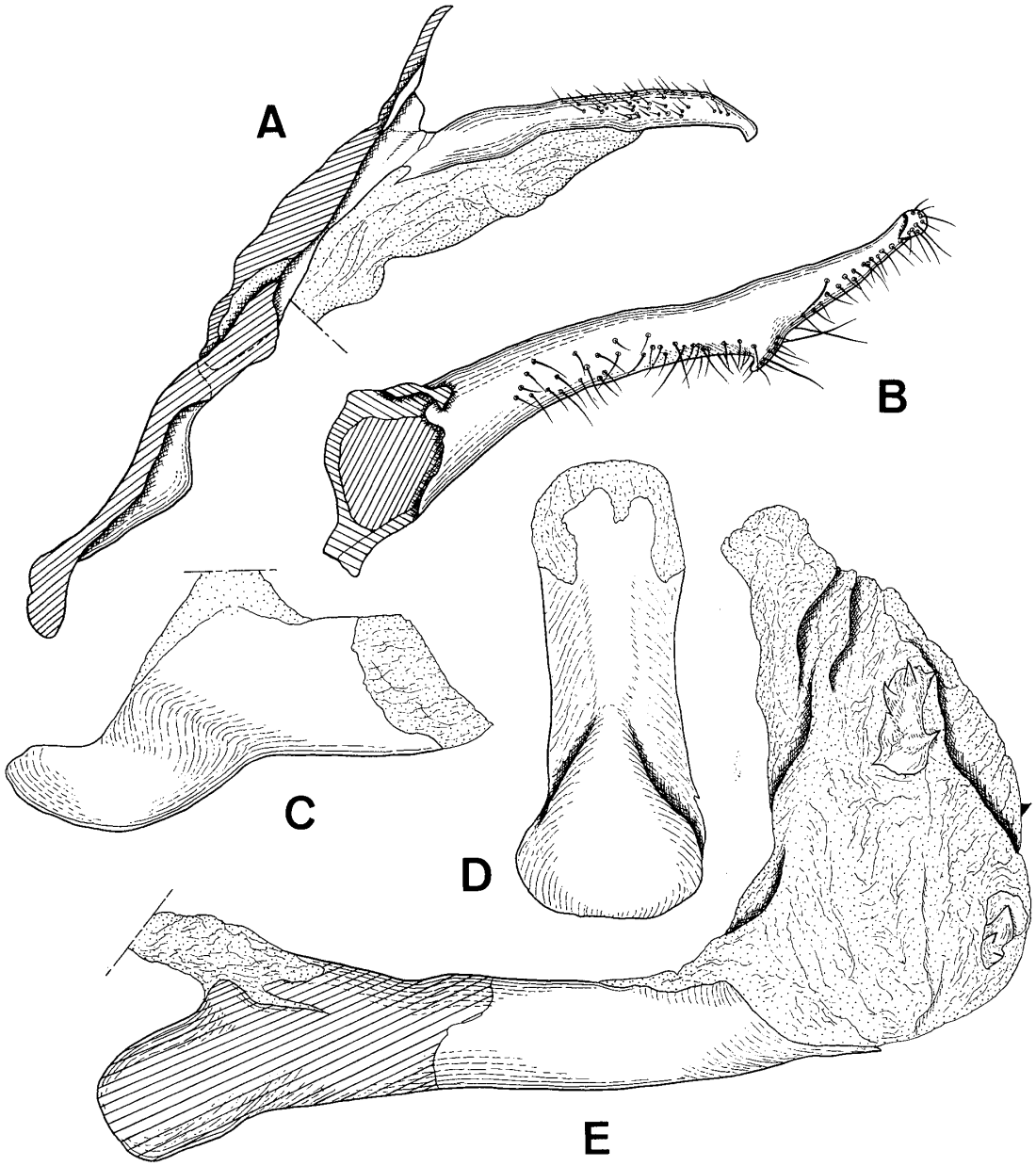

Fig. 83. Male external genitalia of *Creatonotas transiens* (WALKER). A. Ring in lateral view; B. Inside of right valva; C. Juxta in lateral view; D. *Ditto* in ventral view; E. Phallus in lateral view.

with developed acrosternite which is rather wide and expanded posterodorsally; saccus moderately long in *gangis*, but absent in *transiens*. Valva simple and long, clothed with many short hairs; anellifer absent as inner wall of valva uniformly sclerotized; harpe+ampulla region with two processes; transtilla very narrow and extending inwardly. Juxta in ventral view nearly rectangular, basal 1/3 swollen ventrally. Phallus moderately large, nearly straight; subzonal sheath about 1/2 as long as aedeagus; coecum penis moderately large; vesica large, 2/3 as long as aedeagus, everted dorsally, with several sclerites bearing 2－5 short spines.

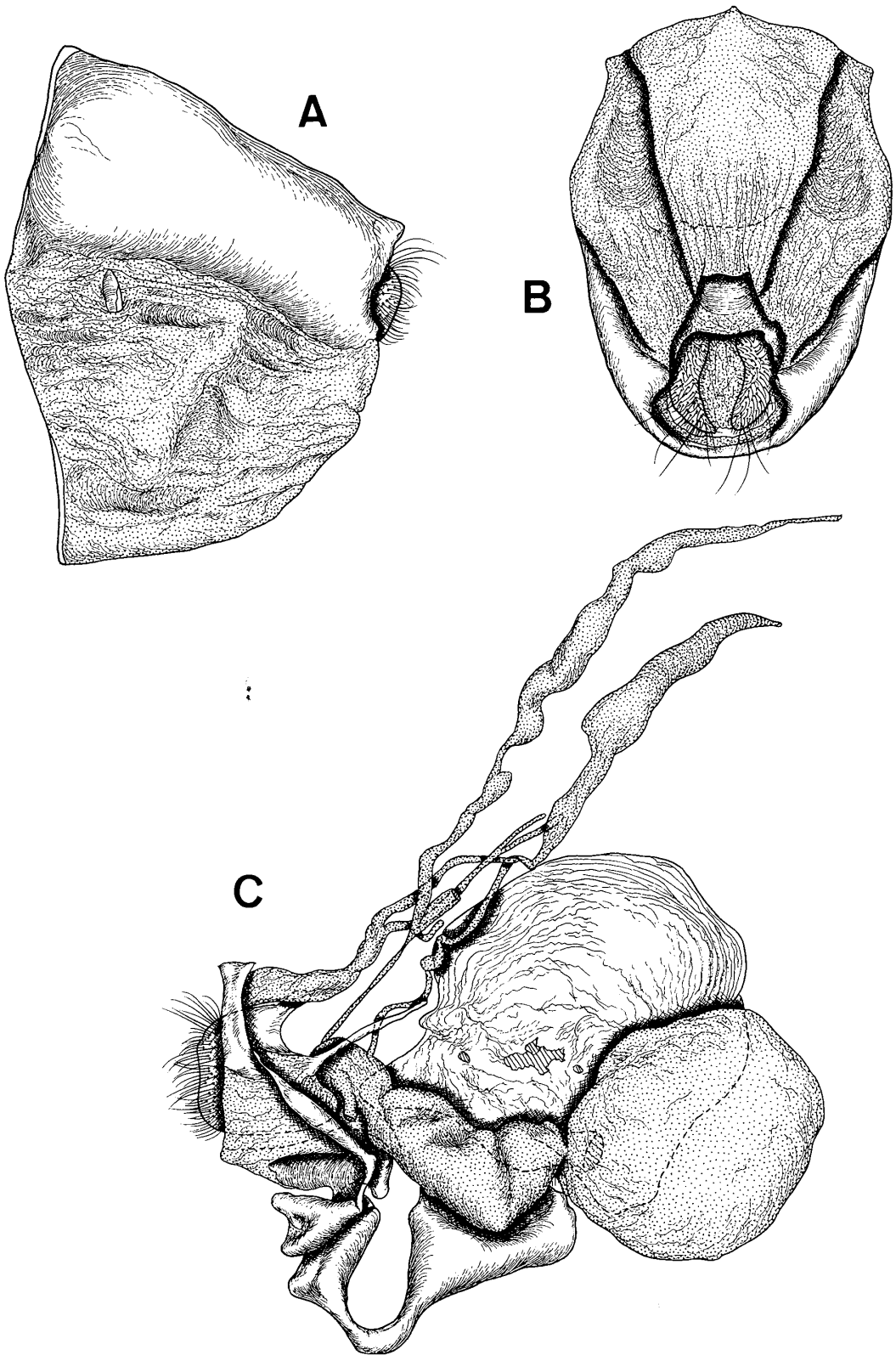

Fig. 84. Female external genitalia and internal reproductive organs of *Creatonotos transiens* (WALKER). A. External genitalia in lateral view; B. *Ditto* in postero-ventral view; C. Internal reproductive organs in lateral view (right).

Female external genitalia: Seventh abdominal tergum well sclerotized and large; 7th sternum strongly desclerotized, so that most of ventral region of the segment is almost membranous. Eighth abdominal segment 1/3 as high as 7th segment; 8th tergum well sclerotized; 8th sternum desclerotized. Lamella antevaginalis rather short, protruding posteriorly, with a weak longitudinal furrow, and laterally fused completely to lamella postvaginalis. Lamella postvaginalis concaved and dome-shaped. Ostium bursae circular. Apophysis anterioris rudimentary, situated on anterosubventral corner of 8th segment. Papilla analis semicircular, clothed with many hairs mixing several long ones; apophysis posterioris long and elongated anterodorsally, as long as height of papilla analis.

Female internal reproductive organs: Anterior end of bursa copulatrix reaching to posterior 1/5 of 6th segment. Sinus vaginalis rather small, situated anterior to lamella postvaginalis. Antrum broad and rounded at base, strongly narrowed anteroventrally and continuous to ductus bursae. Ductus bursae short and narrow, U-shaped. Cervix bursae well developed, sclerotized and funnel-shaped. Corpus bursae membranous, globular, situated above cervix bursae, 2/3 as long as bursa copulatrix; signa are represented by a rectangular plate and several small circular plates which bear some small spinules. Lower part of ductus seminalis arising from posterior end of right side of corpus bursae and extending anteriorly, attached to posterior 1/7 of left lateral side of bulla seminalis; bulla seminalis large and globular, situated lateral to right side of corpus bursae; upper part of ductus seminalis thick, arising from posterior end of bulla seminalis and directing dorsally at basal 1/4, attached to dorsal surface of vestibulum. Spermatheca moderately large. Glandula sevacea slender, subequal in length to bursa copulatrix. Scent gland long and bifurcated at the middle.

This genus is very characteristic in its uniformly sclerotized inner wall of the male valva, rudimental apophysis anterioris of the female genitalia.

I examined the genitalia of the following species.

1. *Creatonotos gangis* (LINNAEUS, 1763) (Fig. 113E, F)
   Phalaena gangis LINNAEUS, 1763, Amoenitates Acad. 6: 410.
   Distribution: Indo-Australian Region.
2. *Creatonotos transiens* (WALKER, 1855) (Figs. 83, 84, 113G, H)
   Spilosoma transiens WALKER, 1855, List Specimens lepid. Insects Colln Br. Mus. 3: 675.
   Distribution: Oriental Region.

4.1.6.14 Genus *Eospiarctia* KÔDA, gen. nov.

Type species: *Seiarctia lewisii* BUTLER, 1855.

Head: Frons at middle 1/3 as wide as head, with moderately long rough scales. Labial palpus porrect, its tip reaching to the level of ventral margin of head, and moderately projecting forward (0.6 × head length) beyond head; length of labial palpus 1.1 × head length; 1st segment subequal to 2nd segment; 3rd segment 4/5 as

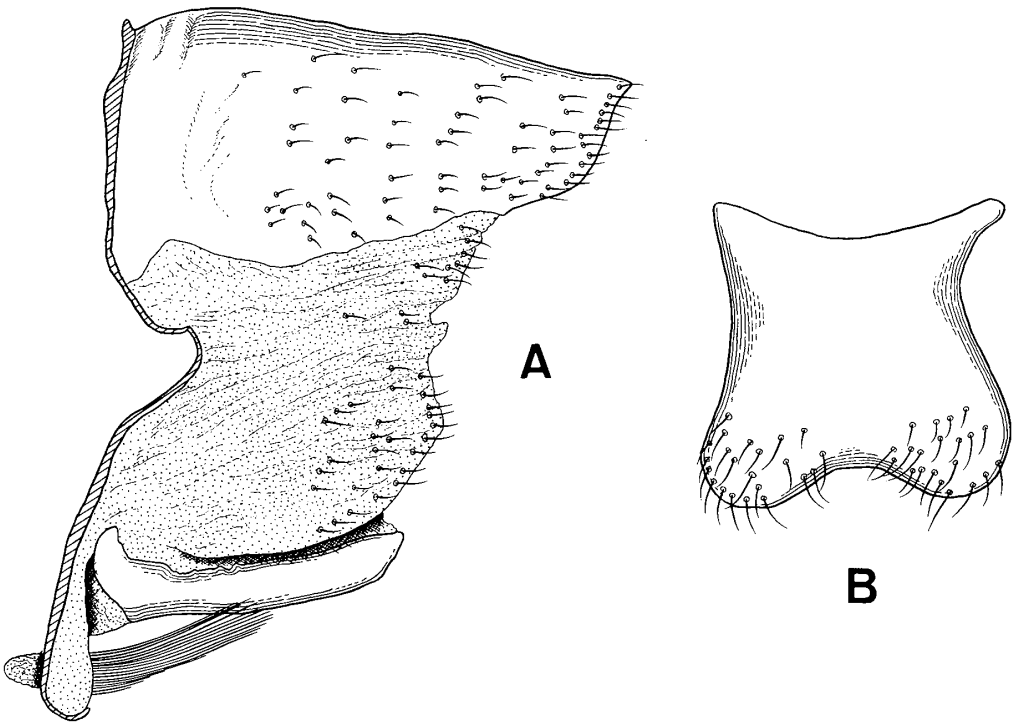

Fig. 85. Male 8th abdominal segment of *Eospilarctia lewisii* (BUTLER). A. Eighth abdominal segment in lateral view; B. Eighth sternum in ventral view.

long as 2nd. Maxillary palpus very small and rounded. Antenna 0.42 × as long as forewing; flagellum bipectinate, consisting of 51 segments; ratio of longth to width of 1st flagellomere 0.6, middle ones 1.3, apical one 2.0; anterior pectination of basal (4th) flagellomere 0.6 ×, middle ones 2.5 × as long as width of the shaft; posterior pectination of basal (2nd) flagellomere 2.4 ×, middle ones 3.5 × as long as width of the shaft.

Legs. Fore leg: Trochanter 2/5 as long as tibia; tibia 2/3 as long as femur; tarsus 2.0 × as long as tibia; claw 2/3 as long as 5th tarsomere; epiphysis 3/5 as long as tibia and situated at 1/5 from the base of tibia. Mid leg: Trochanter 1/5 as long as tibia; tibia 3/4 as long as femur; anterior terminal spur 0.27 ×, posterior terminal spur 0.22 × as long as tibia. Hind leg: Trochanter 1/5 as long as tibia; tibia 0.93 × as long as femur; median spurs situated at 3/4 from the base of tibia; anterior median spur 0.18 ×, posterior median spur 0.24 ×, anterior terminal spur 0.16 ×, posterior terminal spur 0.26 × as long as tibia.

Wing venation: Fore wing with veins 3, 4 and 5 from lower angle of discoidal cell; 6 from upper angle; 7, 8, 9 and 10 stalked; 11 free. Hind wing with veins 3, 4 and 5 from lower angle of discoidal cell, 6 and 7 from upper angle; 8 from middle of discoidal cell.

Male external genitalia: Tegumen well developed; its anterior and posterior parts completely united with each other, dorsal portion of anterior part strongly upheaved dorsally; pedunculus short; acrotergite well developed and its posterior portion strongly elongated posteriorly. Fenestrula and lateral membranous slits absent. Uncus in dorsal view very wide, broad on basal 1/2 and gradually tapered to apex, in

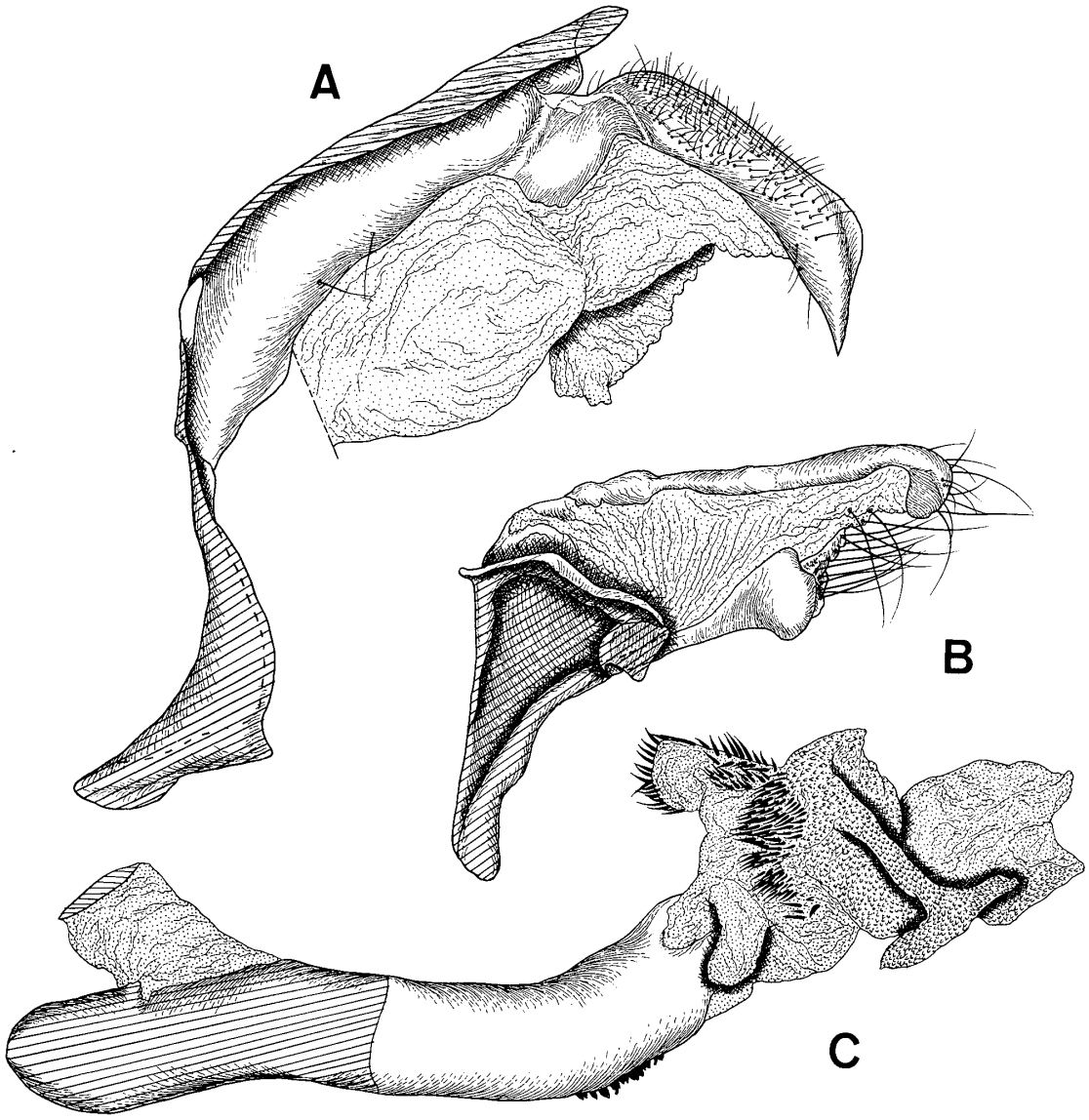

Fig. 86. Male external genitalia of *Eospilarctia jordansii* (DANIEL). A. Ring in lateral view ; B. Inside of right valva ; C. Phallus in lateral view.

lateral view tapered to apex and weakly or strongly curved posteroventrally, in *neurographa* swollen dorsally at the middle. Vinculum rather narrow, 1/2 as deep as ring ; saccus small, 1/4 as long as height of ring. Valva variable in size ; subdivision of its inner wall indistinct in *lewisii* and *neurographa* ; costa short ; in *lewisii* and *neurographa* harpe+ampulla very narrow and occupying distal 1/7 of inner wall, with many hairs, but in *nehallenia* and *jordansii* its dorsal portion produced posteriorly to form a long process ; anellifer broad ; sacculus narrow in *lewisii*, in the other species well developed and rounded apically. Juxta nearly quadrate, with emarginated apical margin. Phallus moderately large ; suprazonal sheath weakly curved posterodorsally at the middle, in *jordansii* with many short spines on ventrodistal portion of right side of aedeagus ; subzonal sheath 1/2 as long as aedeagus ; coecum penis rather large ;

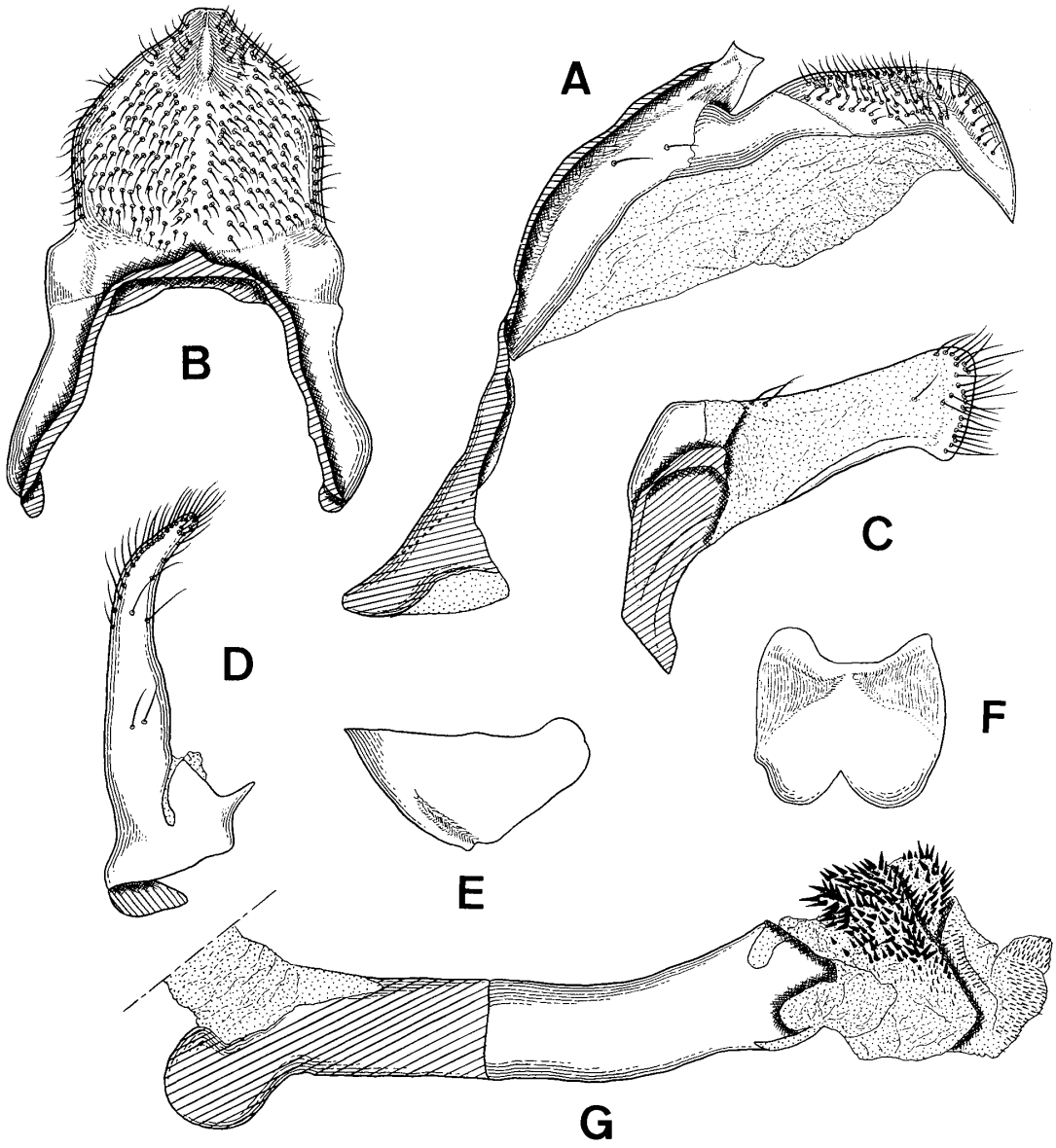

Fig. 87. Male external genitalia of *Eospilarctia lewisii* (BUTLER). A. Ring in lateral view; B. Dorsum in dorsal view; C. Inside of right valva; D. *Ditto* in dorsal view; E. Juxta in lateral view; F. *Ditto* in ventral view; G. Phallus in lateral view.

vesica rather broad, 1/2 as long as aedeagus, everted posteriorly, with 2 groups of many short spines and 2 groups of many minute spinules.

Female external genitalia: Seventh abdominal tergum large and well sclerotized; 7th sternum reduced and weakly sclerotized, most of its lateral portions desclerotized, so that lateral membranous area broad. Eighth abdominal segment 1/2 as high as 7th segment; 8th abdominal tergum completely fused with its sternum, posterior margin of 8th sternum distinctly desclerotized. Lamella antevaginalis wide, concaved and slightly curved dorsally towards ostium bursae; lamella postvaginalis rounded, with several transeverse furrows on its entire surface. Ostium bursae lenticular. Apophysis

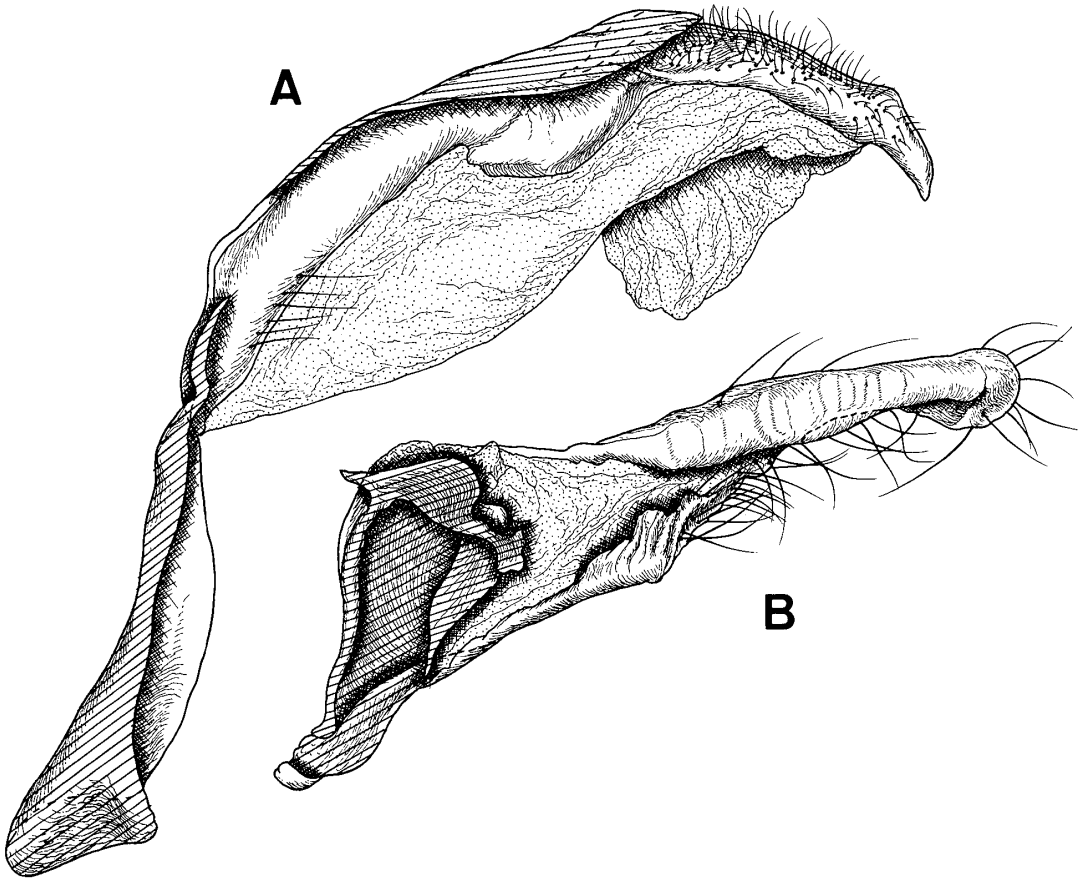

Fig. 88. Male external genitalia of *Eospilarctia nehallenia* (OBERTHÜR). A. Ring in lateral view; B. Inside of right valva.

anterioris rudimentaly, situated on proximal portion of dorsal 1/3 of 8th segment in lateral view. Papilla analis very large, triangular, with many short hairs; apophysis posterioris as long as height of papilla analis.

Female internal reproductive organs: Anterior end of bursa copulatrix reaching to posterior 1/6 of 6th segment. Sinus vaginalis rather large, membranous, broadened anteriorly. Distinction between antrum and ductus bursae obscure; ductus bursae short and thick, with more or less strong ventral keel. Cervix bursae large but short, sclerotized, with many complicated furrows on its entire surface, situated lateral to left side of ductus bursae. Corpus bursae membranous and globular, 1/2 as long as bursa copulatrix, with signa which are represented by a pair of circular plates having some small spinules. Lower part of ductus seminalis thick, arising from anteroventral portion of left side of cervix bursae, directed dorsally and continuing bulla seminalis; bulla seminalis very large and globular, subequal in size to corpus bursae, situated anterodorsal side of corpus bursae; upper part of ductus seminalis arising from posterodorsal corner of bulla seminalis and extending posterodorsally, curved ventrally at the middle and attached to left lateral side of vestibulum. Spermatheca very large. Glandula sevacea moderate in size, 1.5 × as long as bursa copulatrix. Scent

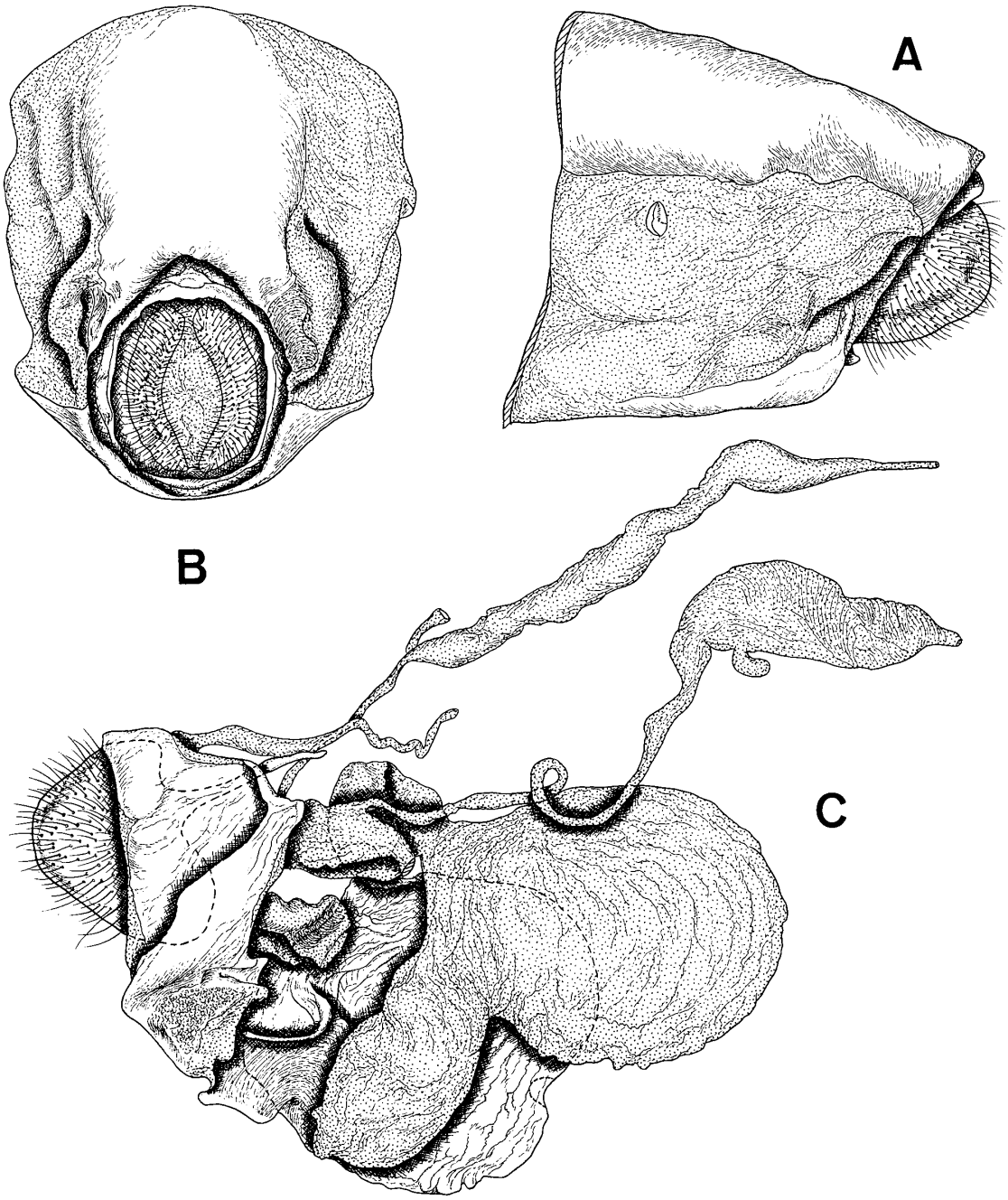

Fig. 89. Female external genitalia and internal reproductive organs of *Eospilarctia lewisii* (BUTLER). A. External genitalia in lateral view ; B. *Ditto* in posteroventral view ; C. Internal reproductive organs in lateral view (right).

gland long and unforked.

The genus *Eospilarctia* is erected here to include four species, i.e., *jordansii, lewisii, nehallenia* and *neurographa*. They have been considered as the members of the genus *Spilarctia*. *Eospilarctia* is a distinct monophyletic group characterized by the following apomorphies: In female genitalia ; very large papilla analis ; ductus bursae very thick, with ventral keel. In the male, this new genus is easily distinguished from

Spilarctia by the simple plesiomorphic 8th abdominal segments without special androconia group or a pair of spaturate plates on its sternum

I examined the genitalia of the following species.

1. *Eospilarctia jordansii* (DANIEL, 1943) **comb. nov.** (Figs. 86, 114A, B)
   Spilarctia jordansii DANIEL, 1943, *Mitt. Munchen ent. Ges.* **33**: 725.
   Distribution: West China.
2. *Eospilarctia lewisii* (BUTLER, 1855) **comb. nov.** (Figs, 85, 87, 89, 114C, D)
   Seiarctia lewisii BUTLER, 1885, *Cist. Ent.* **3**: 115.
   Distribution: West China, Taiwan and Japan (Honshu, Shikoku and Kyushu).
3. *Esopilarctia nehallenia* (OBERTHÜR, 1911) **comb. nov.** (Figs. 88, 114E, F)
   Diacrisia nehallenia OBERTHÜR, 1911, *Et. Lepid. comp.* **5** (1): 337, pl.83, fig. 786.
   Distribution: West China and Taiwan.
4. *Eospilarctia neurographa* (HAMPSON, 1909) **comb. nov.** (Fig. 114G)
   Diacrisia neurographa HAMPSON, 1909, *Ann. Mag. nat. Hist.* (8) **4**: 360.
   Distribution: Taiwan.

4.1.6.15 Genus *Cladarctia* KÔDA, gen. nov.

Type species: *Euprepia quadriramosa* KOLLER, 1844.

Head: Frons at middle 1/3 as wide as head, with long rough scales. Labial palpus porrect, its tip reaching to 2/5 level of frons, and moderately projecting forward (0.5 × head length) beyond head; length of labial palpus 1.2 × as long as head; 1st segment subequal to 2nd segment; 3rd segment 3/4 as long as 2nd. Maxillary palpus small and rounded. Antenna 0.43 × as long as fore wing; flagellum bipectinate, consisting of 51 segments; ratio of length to width of 1st flagellomere 1.0, middle ones 0.8, apical one 6.0; anterior pectination of basal (4th) flagellomere 0.2 ×, middle ones 1.6 × as long as width of the shaft; posterior pectination of basal (2nd) flagellomere 1.2 ×, middle ones 3.0 × as long as width of the shaft.

Legs. Fore leg: Trochanter 2/5 as long as tibia; tibia 1/2 as long as femur; tarsus 2.0 × as long as tibia; claw 2/5 as long as 5th tarsomere; epiphysis 3/5 as long as tibia and situated at 1/5 from the base of tibia. Mid leg: Trochanter 1/4 as long as tibia; 4/5 as long as femur; anterior terminal spur 0.12 ×, posterior terminal spur 0.18 × as long as tibia. Hind leg: Trochanter 1/5 as long as tibia; tibia 1.1 × as long as femur; median spurs situated at 3/4 from the base of tibia; anterior median spur 0.11 ×, posterior median spur 0.15 ×, anterior terminal spur 0.1 ×, posterior terminal spur 0.13 × as long as tibia.

Wing venation: Fore wing with veins 3, 4 and 5 from lower angle of discoidal cell; 6 from upper angle; 7. 8. 9 and 10 stalked; 11 free. Hind wing with veins 3, 4 and 5 from lower angle of discoidal cell; 6 and 7 from upper angle; 8 from middle of discoidal cell.

Male external genitalia: Tegumen moderately large and long; its anterior and posterior parts completely united with each other; dorsal portion of anterior part

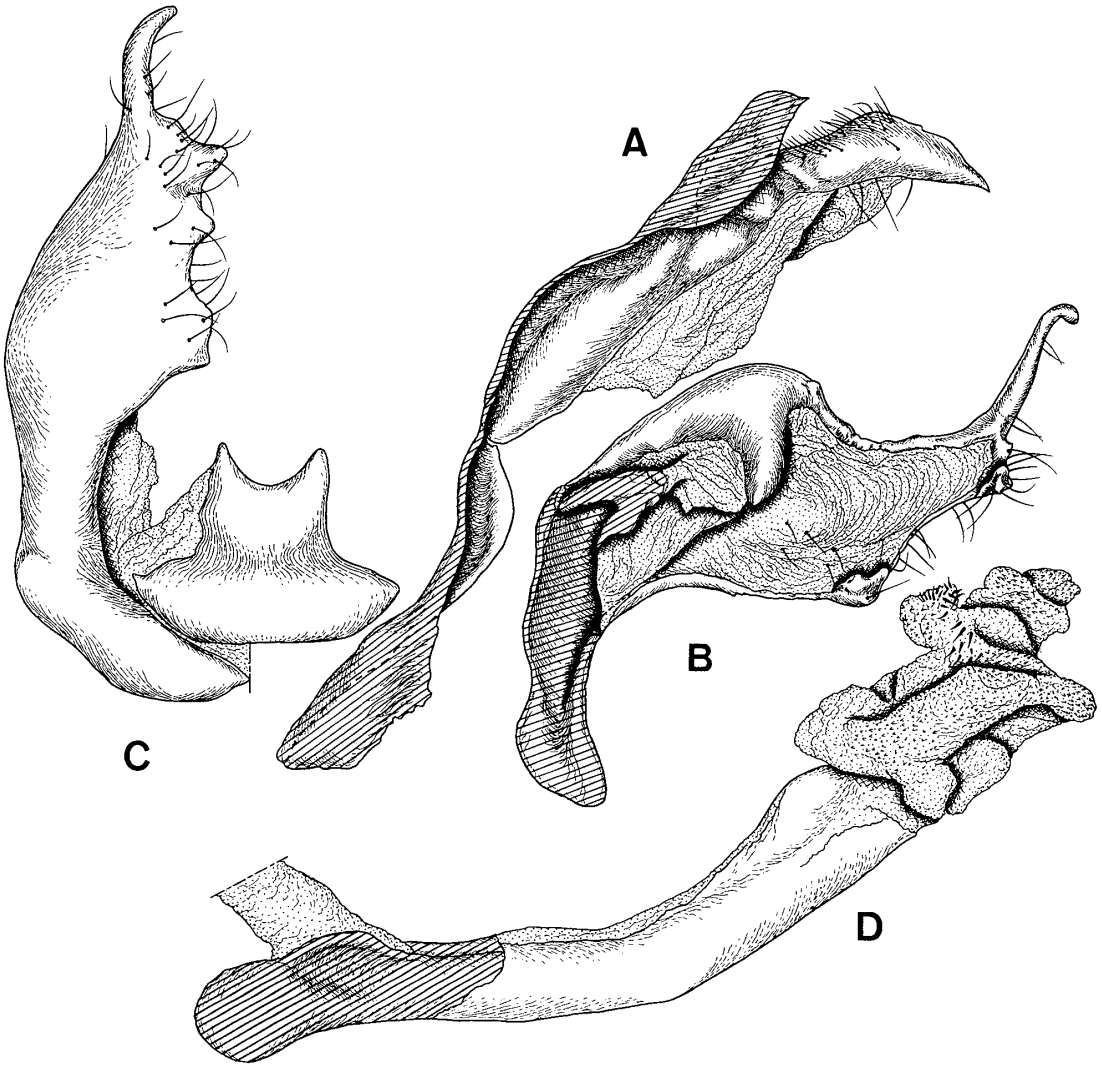

Fig. 90. Male external genitalia of *Cladarctia quadriramosa* (KOLLER). A. Ring in lateral view; B. Inside of right valva; C. Left valva and juxta in ventral view; D. Phallus in lateral view.

strongly upheaved dorsally; pedunculus short; acrotergite well developed, its posterior portion much broadened. Fenestrula and lateral membranous slits absent. Uncus rather large, clothed with many hairs, weakly swollen dorsally at the middle and tapered to pointed apex. Vinculum 1/2 as deep as ring; saccus developed, 1/4 as long as height of ring. Valva large; costa large and wide, apical 1/4 strongly produced ventrally; harpe+ampulla rather long and sparsely haired, its dorsal portion produced dorsally to form a long slender process; anellifer broad and occupying most of inner wall of valva; sacculus very narrow and its distal portion weakly produced inwardly. Phallus long; suprazonal sheath weakly curved dorsally at the middle, basal 2/3 of its dorsal surface membranous, apical portion of aedeagus swollen dorsally; subzonal sheath 2/5 as long as aedeagus; coecum penis moderately large; vesica 2/5 as long as aedeagus, everted dorsally, with many short spines and 2 groups of minute spinules.

Juxta broad at base and strongly constricted at basal 1/2, posterior 1/2 nearly quadrate, with emerginate apical margin.

This genus is characteristic in having well developed costa of male valva. This genus is erected here for *quadriramosa*, which has hitherto been included in the North American genus *Estigmene* (Type species: *Phalaena acraea* DRURY, 1773). In the male genitalia *Estigmene* is easily distinguished from this new genus by the protuberate process of uncus and small and simple valva.

Only one species is included in this genus.

1. *Cladarctia quadriramosa* (KOLLER, 1844) **comb. nov.** (Figs. 90, 114H)
   Euprepia quadriramosa KOLLER, 1844, in HUGEL, Kaschmir. 4 (2): 468.
   Distribution: Kashmir, Nepal, Sikkim and West China.

4.1.6.16 Genus *Paraspilarctia* KÔDA, gen. nov.

Type species: *Diacrisia magna* WILEMAN, 1910.

Head: Frons at middle 1/4 as wide as head, with long rough scales. Labial palpus upturned, its tip reaching to 1/5 level of frons, and strongly projecting forward (0.85 × head length) beyond head; length of labial palpus subequal to head length; 1st segment subequal to 2nd segment; 3rd segment 2/3 as long as 2nd. Maxillary palpus small and rounded. Antenna 0.43 × as long as forewing; flagellum bipectinate, consisting of 62 – 63 segments; ratio of length to width of 1st flagellomere 0.7, middle ones 1.0, apical one 3.5; anterior pectination of basal (5th) flagellomere 0.4 ×, middle ones 3.5 × as long as width of the shaft; posterior pectination of basal (3rd) flagellomere 3.0 ×, middle ones 5.5 × as long as width of the shaft.

Legs. Fore leg: Trochanter 1/4 as long as tibia; tibia 3/4 as long as femur; tarsas 1.44 × as long as tibia; claw 3/5 as long as 5th tarsomere; epiphysis 2/3 as long as tibia and situated at 1/5 from the base of tibia. Mid leg; Trochanter 1/5 as long as tibia; tibia 4/5 as long as femur; anterior terminal spur 0.18 ×, posterior terminal spur 0.22 × as long as tibia. Hind leg: Trochanter 1/5 as long as tibia; tibia 1.1 × as long as femur; median spurs situated at 2/3 from base of tibia; anterior median spur 0.16 ×, posterior median spur 0.18 ×, anterior terminal spur 0.16 ×, posterior terminal spur 0.22 × as long as tibia.

Wing venation: Fore wing veins 3, 4 and 5 from lower angle of discoidal cell; 6 from upper angle; 7, 8, 9 and 10 stalked; 11 free. Hind wing with veins 3, 4 and 5 from lower angle of discoidal cell; 6 and 7 from upper angle; 8 from middle of discoidal cell.

Male external genitalia: Tegumen large; its anterior and posterior parts continuous to each other leaving a weak transeverse ridge; pedunculus very short; acrotergite well developed. Fenestrula and lateral membranous slits absent. Uncus well developed and complicated, basal 2/3 produced dorsally to form a shield-like swelling, its middle portion concaved dorsally and bearing several longitudinal ridges, with many stiff hairs between the ridges; posteroventral portion of uncus rostral. Vin-

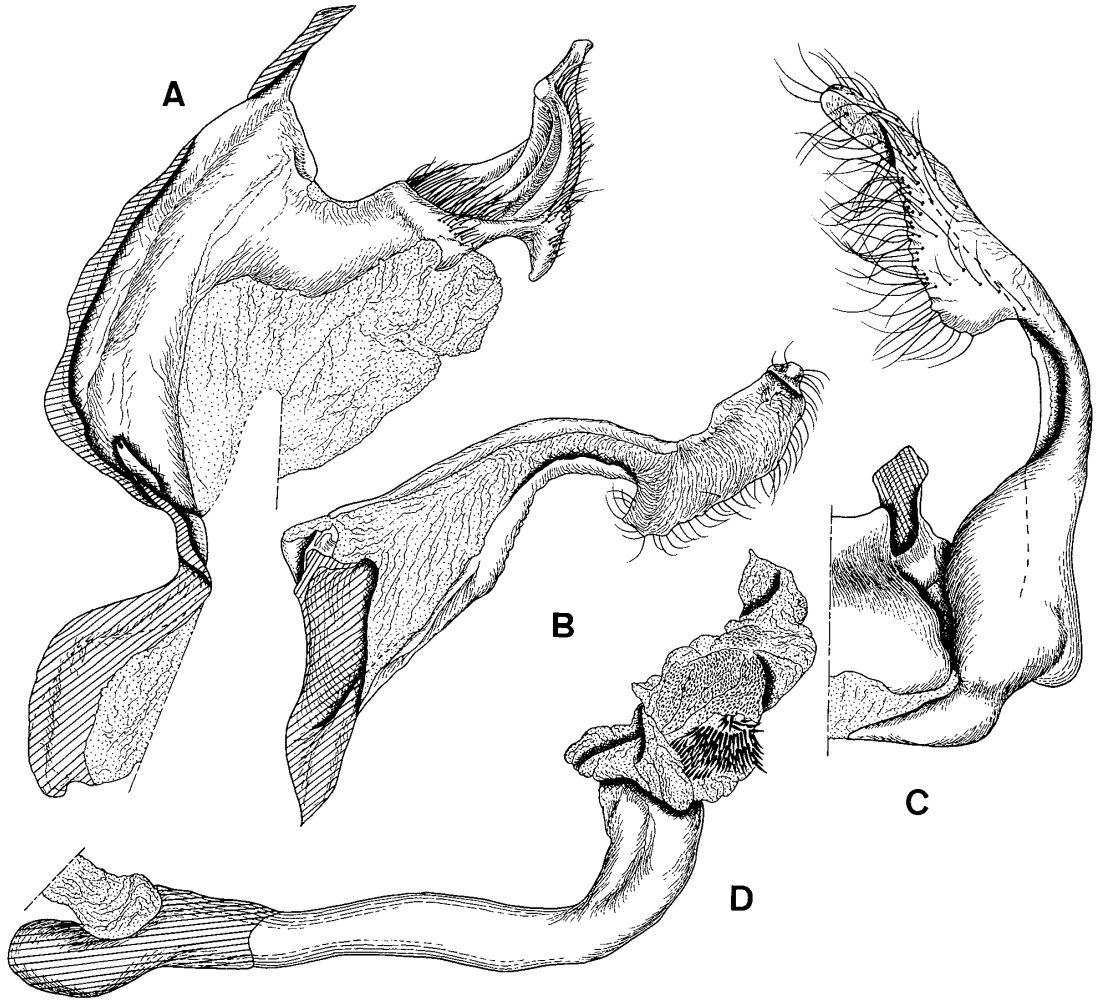

Fig. 91 Male external genitalia of *Paraspilarctia magna* (WILEMAN). A. Ring in lateral view; B. Inside of right valva; C. Left valva and juxta in ventral view; D. Phallus in lateral view.

culum narrow, short and twisted, 2/5 as deep as ring; saccus almost undeveloped. Phallus long and slender; suprazonal sheath strongly curved dorsally at apical 1/4, without carina penis; subzonal sheath 1/3 as long as aedeagus; vesica moderately large, 1/3 as long as aedeagus, everted dorsally, with many spines and congregation of minute spinules. Valva moderately long and elongate; costa slender and very long, continuous to harpe+ampulla region; harpe+ampulla quadrate, its inner wall concaved, clothed with many long hairs on its outer wall; anellifer broad occupying basal 2/3 of inner wall; sacculus slender and continuous to proximal portion of harpe+ampulla. Juxta in ventral view nearly trapezoidal, continuous to sclerotized anellus laterally.

The genus *Paraspilarctia* is erected here for (only one species) *magna*, which has hitherto been included in the genus *Pericallia* of the *Arctia* genus group.

This genus is characterized by the apomorphic characters such as the male uncus having a shield-like process, the curved suprazonal sheath of the aedeagus, and

sclerotized anellus continuous to the juxta.

1. *Paraspilarctia magna* (WILEMAN, 1910) **comb. nov.** (Figs. 91, 115A, B)
   Diacrisia magna WILEMAN, 1910, *Entomologist* **43**: 136.
   Distribution: Taiwan.

4.1.6.17 Genus ***Spilosoma*** CURTIS, 1825

Spilosoma CURTIS, 1825, Br. Ent. 2: pl. 92. Type species: *Bombyx menthastri* [DENIS & SHIFFERMULLER], 1775, by original designation.
B. menthastri is a junior subjective synonym of *Phalaena lubricipeda* LINNAEUS, 1758.
Spilosoma STEPHENS, 1827, in Anonymous, Retrospective Revieu (2): 242. Type species: *Phalaena lubricipeda* LINNAEUS, 1758, by monotypy.
A junior homonym of *Spilosoma* CURTIS, 1825.

Male external genitalia: Tegumen moderately large; its anterior and posterior parts completely united with each other, dorsal portion of anterior part strongly upheaved dorsaly; pedunculus short; acrotergite developed. Fenestrula and lateral membranous slits absent. Uncus rather large, gradually curved ventrally and tapered to pointed apex. Vinculum rather narrow, 1/2 as deep as ring; saccus moderately large, 1/4 as long as height of ring. Valva pistol-like in shape; costa narrow, continuous to dorsoproximal portion of harpe+ampulla; harpe+ampulla very long,

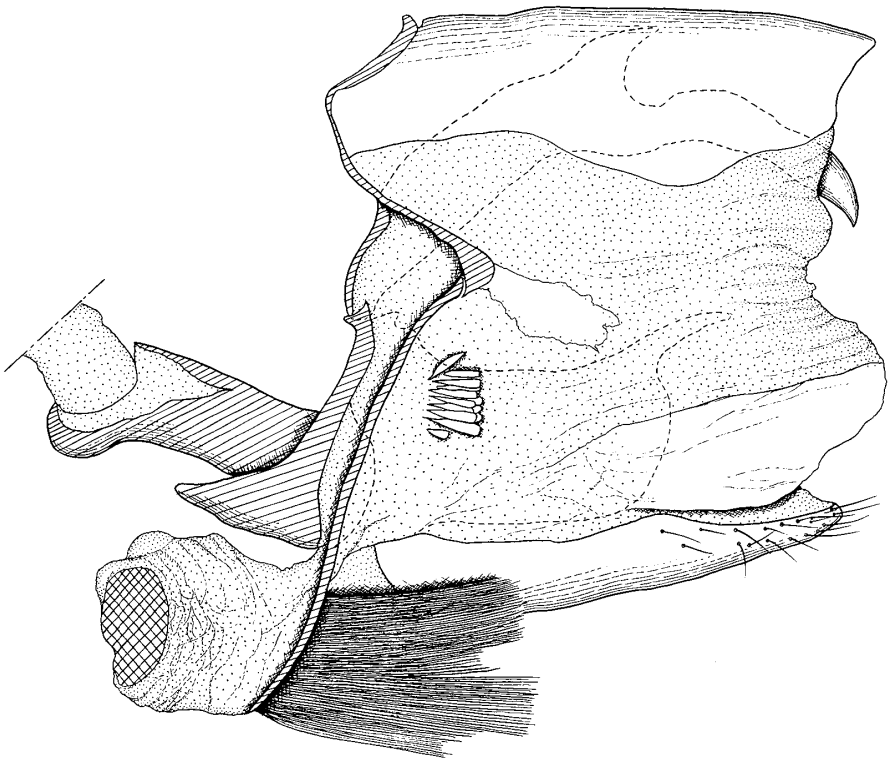

Fig. 92. Male 8th abdominal segment and whole genitalia of *Spilosoma lubricipedum* (LINNAEUS) in lateral view.

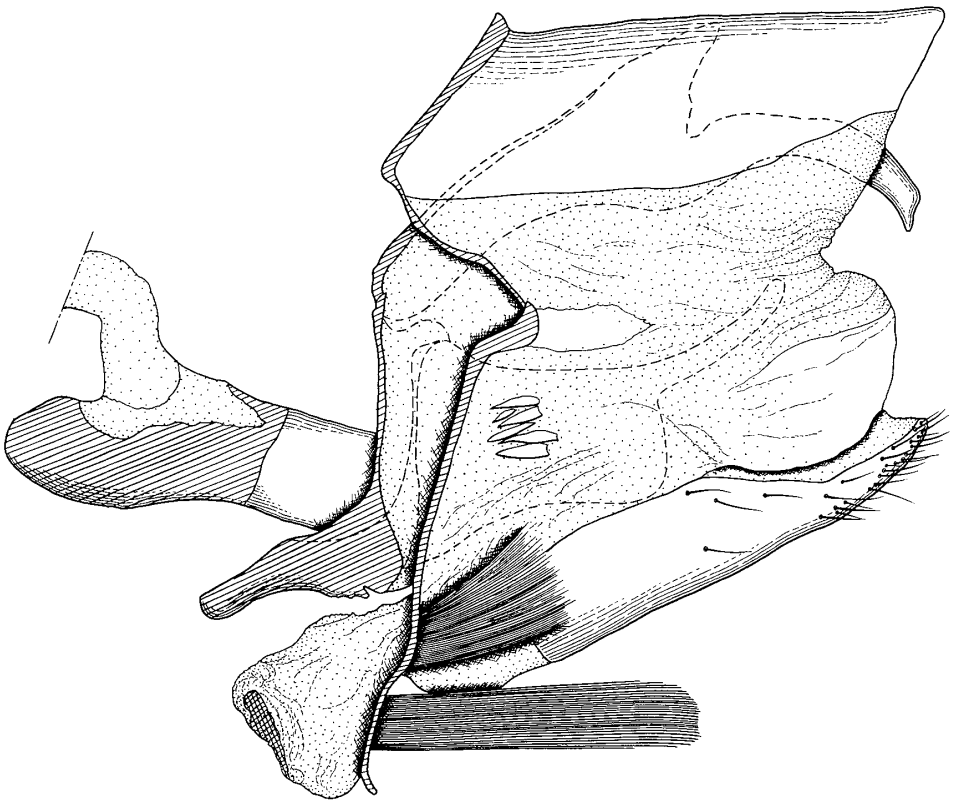

Fig. 93. Male 8th abdominal segment and whole genitalia of *Spilosoma punctarium* (STOLL) in lateral view.

and produced distally to form a long process; anellifer nearly triangular, occupying basal portion of valva; sacculus well developed, strongly expanded ventrally to form a triangular flap; transtilla undeveloped. Juxta nearly trapezoid in ventral view, with weakly emarginate poximally. Phallus moderately large; suprazonal sheath nearly straight, with small spines on its dorsodistal portion; most of dorsal surface of suprazonal sheath membranous; subzonal sheath 3/5 as long as aedeagus; coecum penis absent or weakly developed; vesica 1/2 as long as aedeagus, everted posteriorly, with two congregations of minute spinules.

Female external genitalia: Seventh abdominal tergum large, well sclerotized; 7th sternum absent so that ventral region of 7th segment extensively membranous except its posteroventral portion which is well sclerotized, and emarginate. Eighth abdominal segment 1/3 as high as 7th abdominal segment; its tergum rather small, well sclerotized, separated from sternum by a pair of broad lateral membranous areas. Lamella antevaginalis rather narrow and floor-shaped, a pair of deep rounded concavities, which are clasped by processes of harpe+ampulla of valvae during copulation, well developed on each side of ostium bursae. Ostium bursae oval. Apophysis anterioris moderately long, directed or weakly curved dorsally, 1/5 as long as height of 8th segment.

Papilla analis rather small, nearly rectangular, clothed with many short hairs; apophysis posterioris slightly longer than apophysis anterioris.

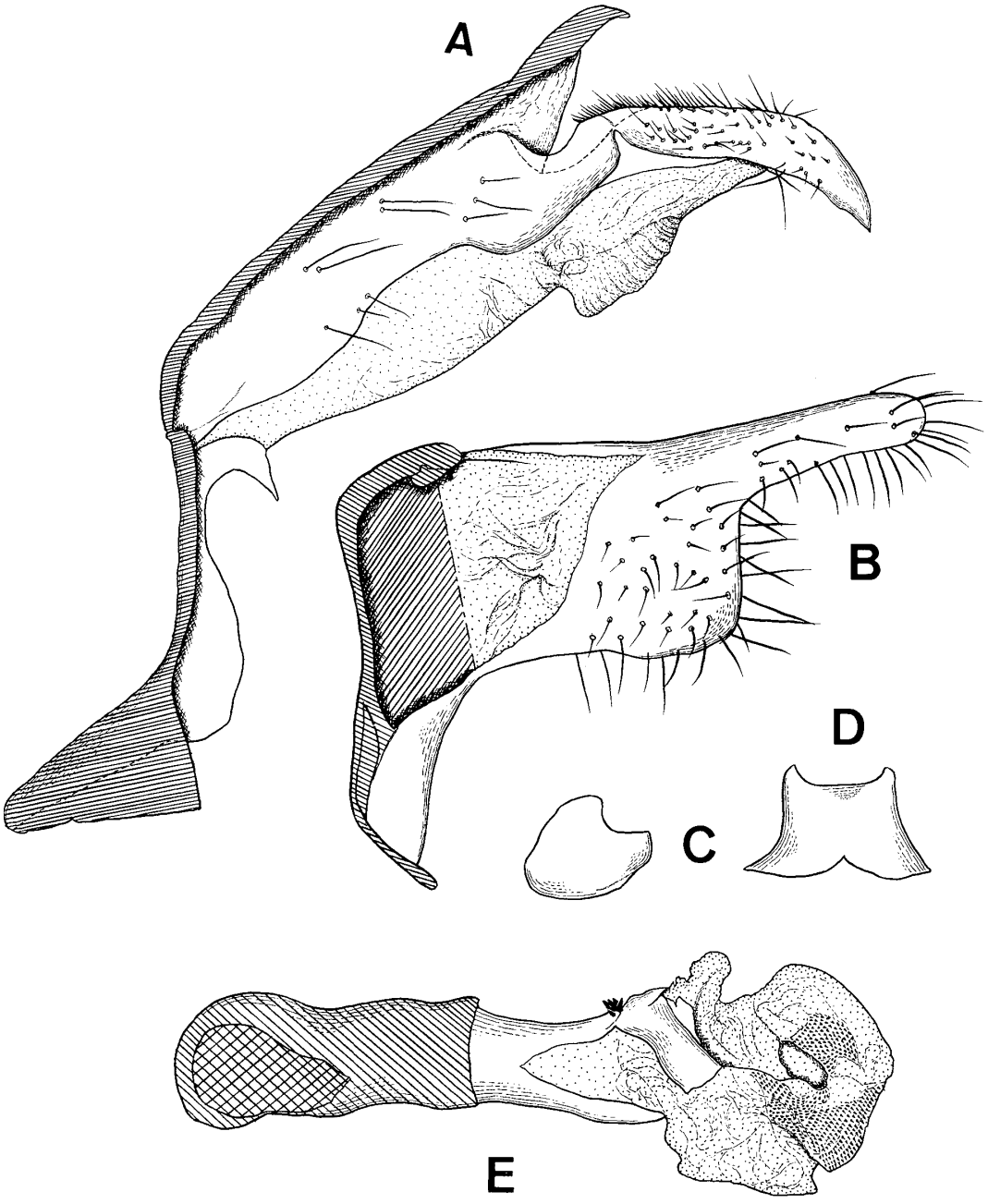

Fig. 94. Male external genitalia of *Spilosoma lubricipedum* (LINNAEUS). A. Ring in lateral view; B. Inside of right valva; C. Juxta in lateral view; D. *Ditto* in ventral view; E. Phallus in dorsal view.

Female internal reproductive organs: Anterior end of bursa copulatrix reaching anterior margin of 7th abdominal segment. Sinus vaginalis very large; antrum short and thick; a narrow membranous area present between antrum and ductus bursae. Ductus bursae short and curved dorsally at middle. Cervix bursae large and sclerotized, with many complicated furrows on its entire surface. Corpus bursae globular, 1/2 as long as bursa copulatrix, with signa which are represented by two pairs of small circular plates bearing some small spinules. Lower part of ductus seminalis arising

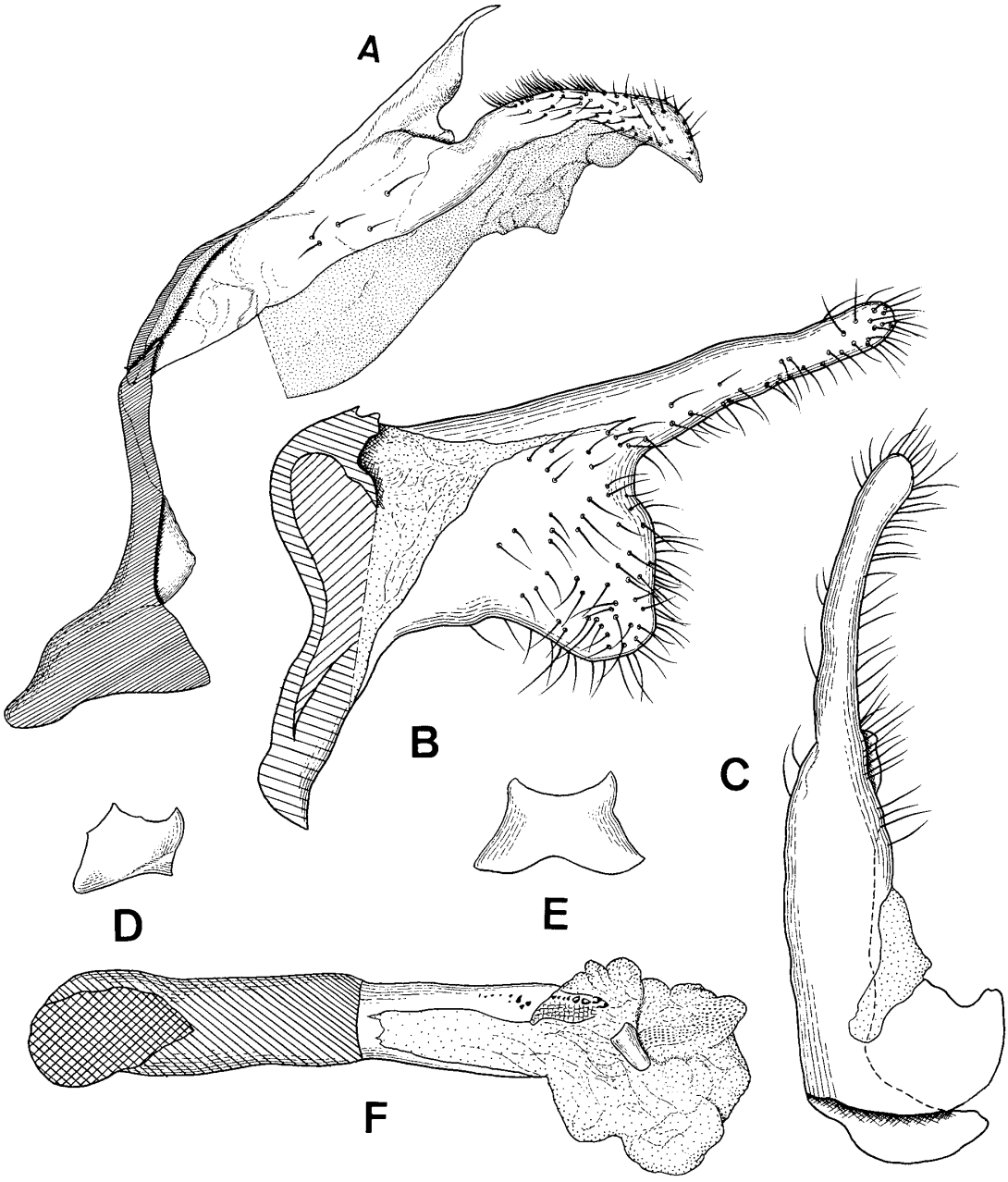

Fig. 95. Male external genitalia of *Spilosoma punctarium* (STOLL). A. Ring lateral view, B. Inside of right valva ; C. *Ditto* in dorsal view ; D. Juxta in lateral view ; E. *Ditto* in ventral view ; F. Phallus in dorsal view.

from ventral side of cervix bursae and directed dorsally or anterodorsally, then curved anteroventrally and attached to posterior 1/3 – 1/2 of ventral side of bulla seminalis ; bulla seminalis very large, subequal to corpus bursae, situated lateral to right side of bursa copulatrix ; upper part of ductus seminalis arising from posterior 1/3 of dorsal surface of bulla seminalis, extending dorsally or posterodorsally and curved ventrally at middle, attached to ventral surface of vestibulum. Spermatheca very large and allantoid, subequal in length to bursa copulatrix. Glandula sevacea very long and

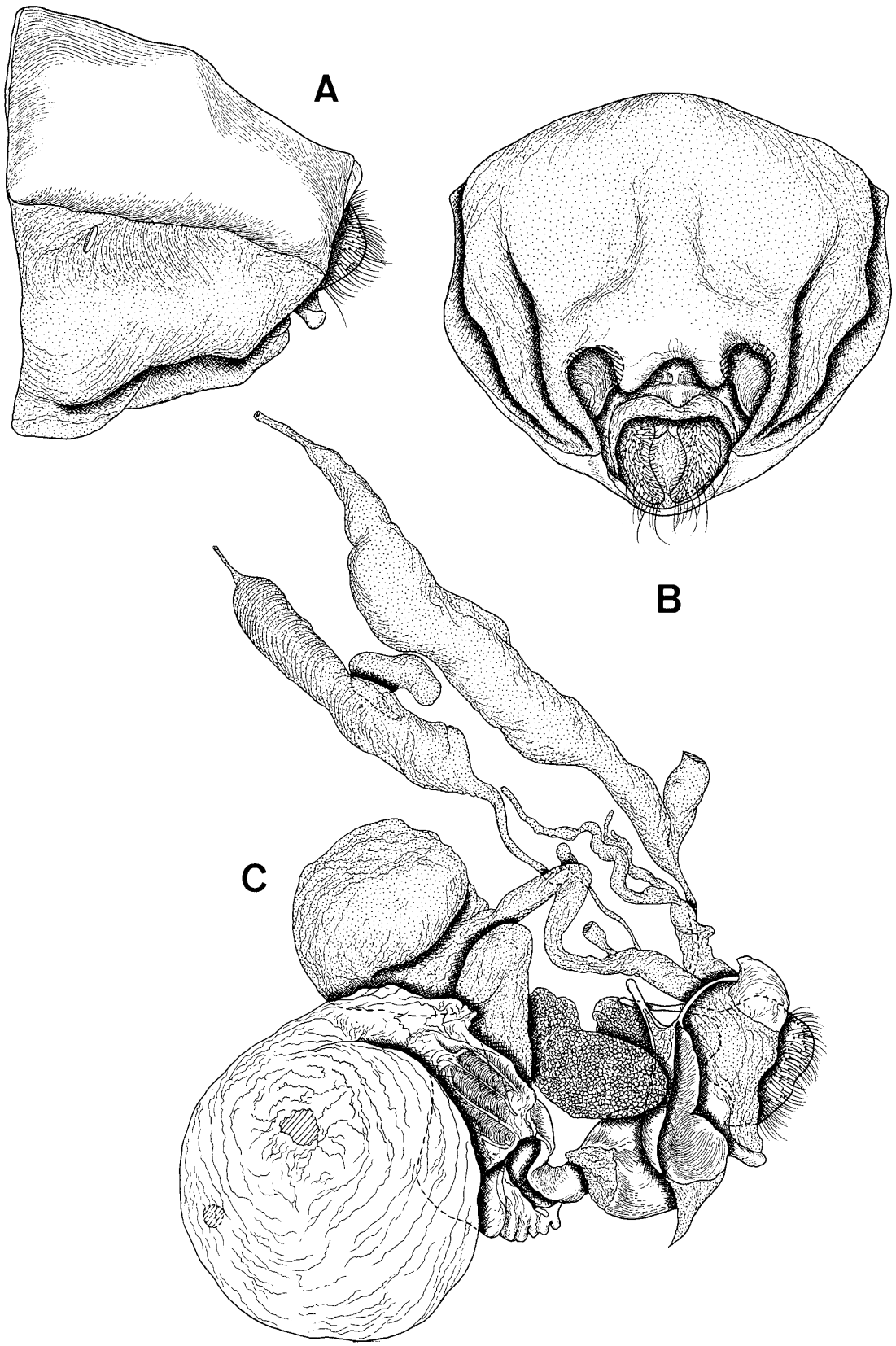

Fig. 96. Female external genitalia and internal reproductive organs of *Spilosoma lubricipedum* (LINNAEUS). A. External genitalia in lateral view; B. *Ditto* in posteroventral view; C. Internal reproductive organs in lateral view (left).

large, 1.5 × as long as bursa copulatrix. Scent gland more or less complicated, with a long and a short branches.

This genus seems to be closely related to the genus *Spilarctia* in the structure of male and female genitalia.

This genus is characterized by following apomorphies: The harpe+ampulla of male is elongated posteriorly; the female bulla seminalis is very large; a pair of deep concavities are developed lateral to the ostium bursae.

I examined the genitalia of the following species.

1. *Spilosoma lubricipedum* (LINNAEUS, 1758) (Figs. 92, 94, 96, 115C, D)
   Phalaena lubricipeda LINNAEUS, 1758, Syst. Nat. (Edn 10) 1: 505.
   Distribution: Palaearctic Region.
2. *Spilosoma punctarium* (STOLL, 1782) (Figs. 93, 95, 115E, F)
   Bombyx punctaria STOLL, 1782, in CRAMER, Uitlandsche Kapellen (Papillons exot.) 4: 233. pl. 398, fig. D.
   Distribution: Ussuri, Amur, China, Korea, Taiwan and Japan (Hokkaido, Honshu, Kyushu and Yakushima Is.).

4.1.6.18 **Genus *Chionarctia* KÔDA**, gen. nov.

Type species: *Dionychopus niveus* MÉNÉTRIÈS, 1859.

Head: Frons at middle 2/5 as wide as head, with dense short scales. Labial palpus weakly upturned, its tip reaching to the level of ventral margin of head, and weakly projecting forward (0.25 × head length) beyond head; length of labial palpus 1.1 × head length; 1st aegment 0.9 × as long as 2nd; 3rd segment 2/5 as long as 2nd. Maxillary palpus very small and rounded. Antenna 0.38 × as long as fore wing; flagellum bipectinate, consisting of 55–58 segments; ratio of length to width of 1st flagellomere 0.7, middle ones 1.4, apical one 2.4; pectination clothed with small white scales on its dorsal surface; anterior pectination of basal (3rd) 1.0 ×, middle ones 2.1 × as long as width of the shaft; posterior pectination of basal (3rd) 1.2 ×, middle ones 3.0 × as long as width of the shaft.

Legs. Fore leg: Trochanter 1/3 as long as tibia; tibia 2/3 as long as femur; tarsus 1.6 × as long as tibia; claw 2/3 as long as 5th tarsomere: epiphysis 3/5 as long as tibia and situated at 1/3 from base of tibia. Mid leg: Trochanter 1/6 as long as tibia; tibia 5/6 as long as femur; anterior terminal spur 0.13 ×, posterior terminal spur 0.13 × as long as tibia. Hind leg: Trochanter 1/10 as long as tibia; tibia 1.3 × as long as femur; median spurs situated at 3/4 from the base of tibia; anterior median spur 0.10 ×, posterior median spur 0.13 ×, anterior terminal spur 0.08 ×, posterior terminal spur 0.11 × as long as tibia.

Wing venation: Fore wing with veins 3, 4 and 5 from lower angle of discoidal cell; 6 from upper angle; 7, 8, 9 and 10 stalked; 11 free. Hind wing with veins 3, 4 and 5 from lower angle of discoidal cell, 6 and 7 from upper angle; 8 from middle of discoidal cell.

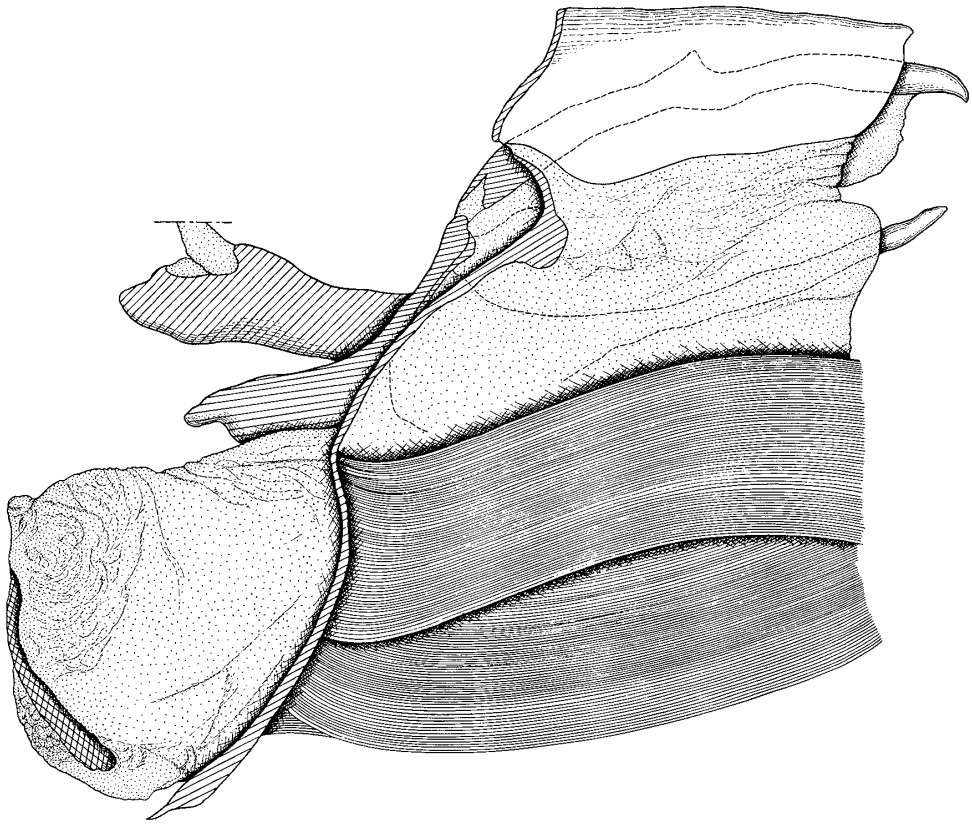

Fig. 97. Male 8th abdominal segment and whole genitalia of *Chionarcta nivea* (MÉNÉTRIÈS) in lateral view.

Male external genitalia: Tegumen moderately large; its anterior and posterior parts completely united with each other, dorsal portion of anterior part strongly upheaved dorsally; pedunculus short; acrotergite developed. Fenestrula and lateral membranous slits absent. Uncus rather large, gradually curved ventrally and tapered to pointed apex. Vinculum rather narrow, 1/2 as deep as ring; saccus moderately large, 1/4 as long as height of ring. Valva a very long process; costa narrow and very short, continuous to dorsoproximal portion of harpe+ampulla; harpe+ampulla very long, and produced distally to form a long process; anellifer nearly triangular, occupying basal portion of valva; sacculus narrow; transtilla undeveloped. Juxta nearly trapezoid in ventral view, with weakly emarginate proximally. Phallus moderately large; suprazonal sheath nearly straight; most of dorsal surface of subzonal sheath membranous; subzonal sheath 1/3 as long as aedeagus; coecum penis weakly developed; vesica 1/2 as long as aedeagus, everted posterodorsally, with some groups of short spines.

Female external genitalia: Seventh abdominal tergum large, well sclerotized; 7th sternum well developed and weakly sclerotized. Eighth abdominal segment 1/3 as high as 7th abdominal segment; its abdominal tergum rather small, well sclerotized, separated from sternum by a pair of broad lateral membranous areas. Lamella antevaginalis rather narrow and floor-shaped. Ostium bursae oval. Apophysis anterioris moderately long and thick, weakly curved dorsally, 2/5 as long as height of

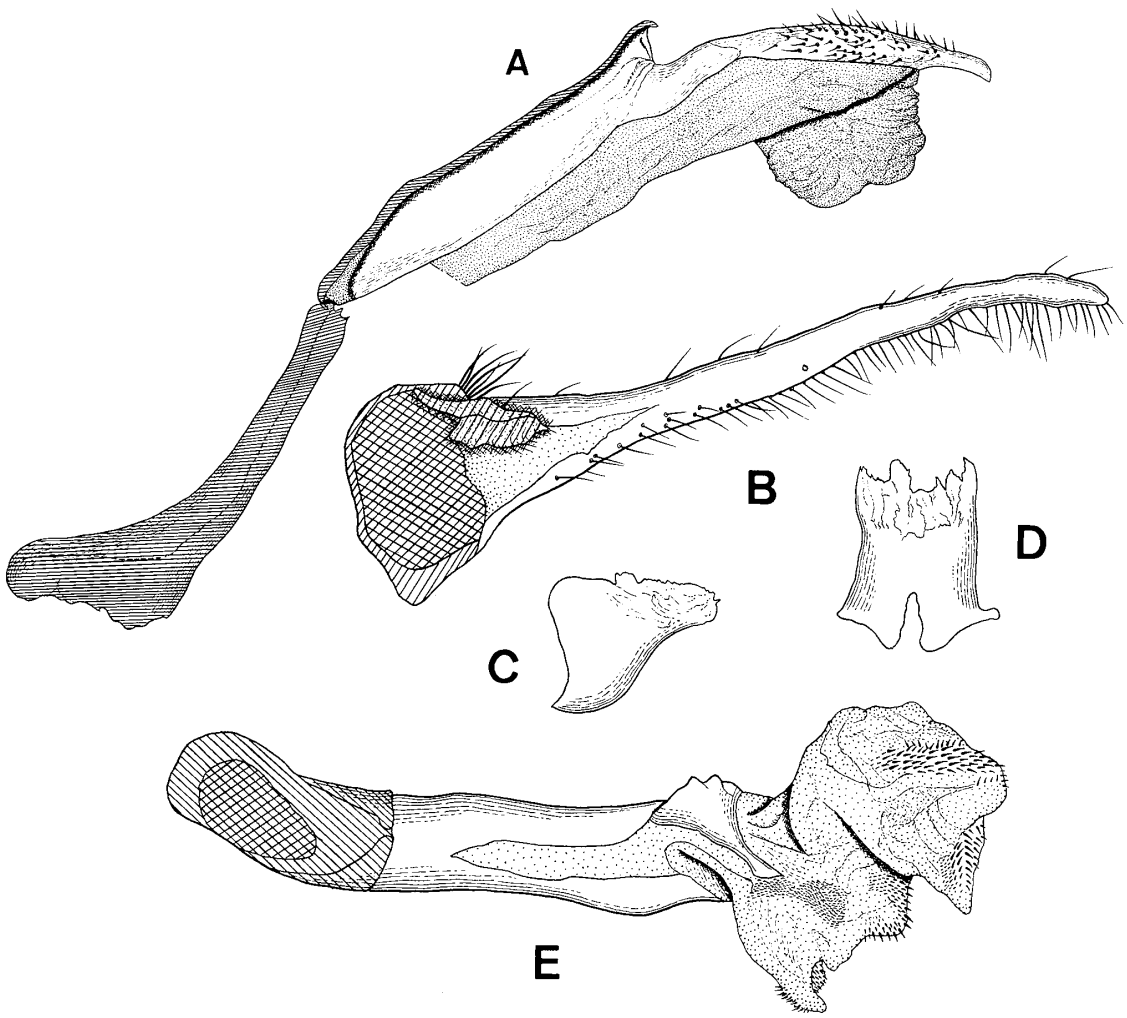

Fig. 98. Male external genitalia of *Chionarctia nivea* (MÉNÉTRIÈS). A. Ring in lateral view; B. Inside of right valva; C. Juxta in lateral view; D. *Ditto* in ventral view; E. Phallus in dorsal view.

8th segment. Papilla analis rather small, nearly rectangular, clothed with many short hairs; apophysis posterioris slightly longer than apophysis anterioris.

Female internal reproductive organs: Anterior end of bursa copulatrix reaching anterior margin of 7th abdominal segment. Sinus vaginalis very large; antrum rather small; a narrow membranous area present between antrum and ductus bursae. Ductus bursae long and its ventral surface gutter-shaped. Cervix bursae large and sclerotized, with many complicated furrows on its entire surface. Corpus bursae globular, 1/2 as long as bursa copulatrix, with signa which are represented by two pairs of small circular plates bearing some small spinules. Lower part of ductus seminalis arising from ventral side of cervix bursae and directed dorsally or anterodorsally, then curved anteroventrally and attached to posterior 1/3 – 1/2 of ventral side of bulla seminalis; bulla seminalis very large, subequal to corpus bursae, situated lateral to right side of bursa copulatrix; upper part of ductus seminalis arising from posterior 1/3 of dorsal

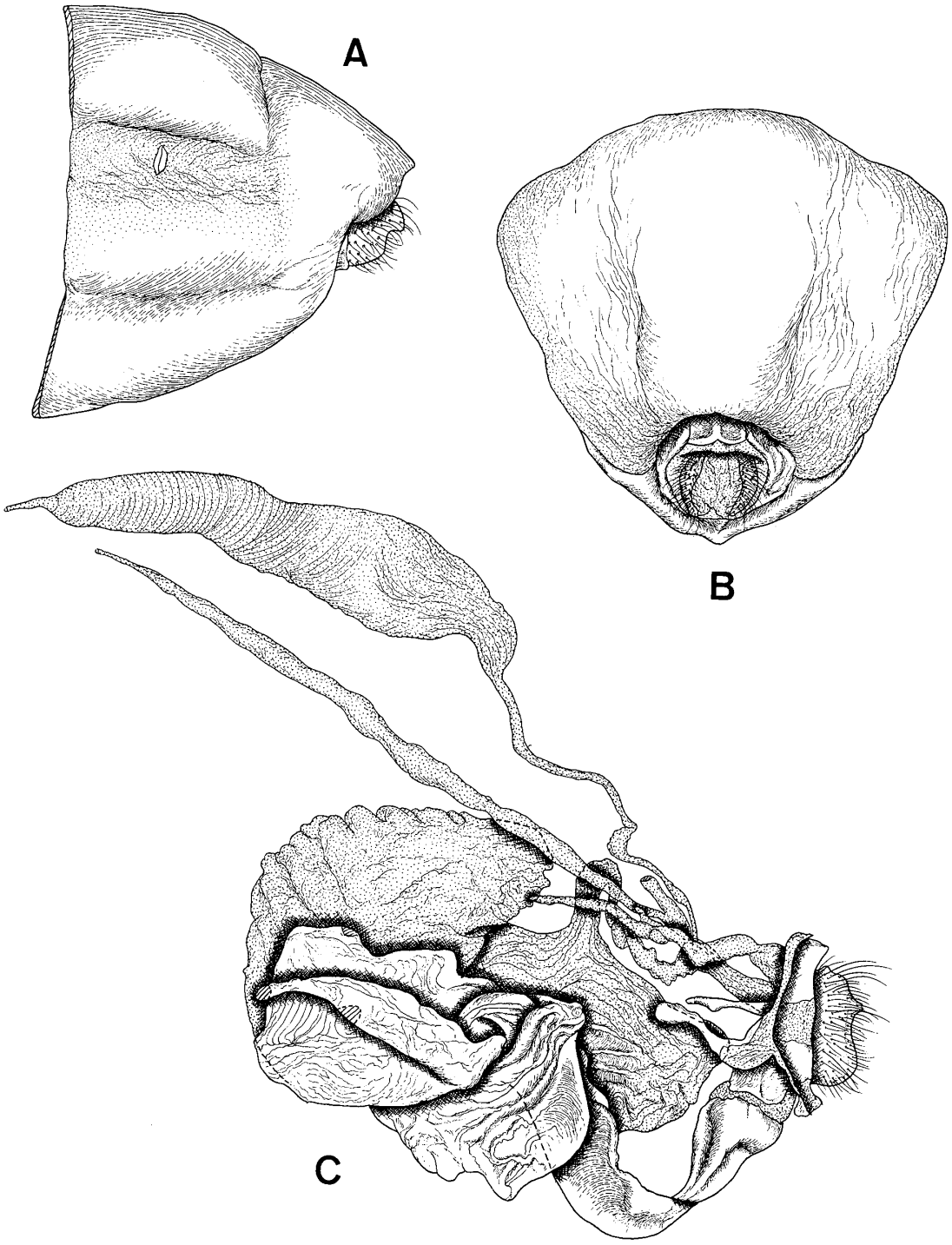

Fig. 99. Female external genitalia and internal reproductive organs of *Chionarctia nivea* (MÉNÉTRIÈS). A. External genitalia in lateral view ; B. *Ditto* in ventral view ; C. Internal reproductive organ in lateral view (left).

surface of bulla seminalis, extending dorsally or posterodorsally and curved ventrally at the middle, attached to ventral surface of vestibulum. Spermatheca very large and allantoid, subequal in length to bursa copulatrix. Glandula sevacea very long and large, 1.5 × as long as bursa copulatrix. Scent gland more or less complicated, with

a long and a short branches.

This genus seems to be closely related to the genus *Spilosoma* in the structure of male and female genitalia in addition to the pectination of antenna. But this new genus is easily distinguished from *Spilosoma* by the simple plesiomorphic 8th abdominal segment without special andoroconia group, the flap of sacculus of the male genitalia.

This genus is characterized by such apomorphic characters as very long valva of male.

I examined the genitalia of the following species.

1. *Chionarctia nivea* (MÉNÉTRIÈS, 1859) **comb. nov.** (Figs. 97－99, 115G, H)
   Dionychopus niveus MÉNÉTRIÈS, 1859, *Bull. Phys. Math. St. Pet.* **17**: 218.
   Distribution: Ussuri, Amur, West and Central China, Korea, Saghalien and Japan (Hokkaido, Honshu, Shikoku, Kyushu and Tsushima Is.).

4.1.6.19 Genus ***Spilarctia*** BUTLER, 1875

Spilarctia BUTLER, 1875, *Cistula ent.* **2**: 39. Type species: *Phalaena lutea* HÜFNAGEL, 1766, subsequent designation by KIRBY, 1877, in RYE, zool. Rec. 12: 431.

Male external genitalia: Tegumen usually narrow and long; its anterior and posterior parts completely united with each other, dorsal portion of anterior part weakly or strongly upheaved dorsally; pedunculus short; acrotergite well developed and its subdorsal portion strongly expanded. Fenestrula and lateral membranous slits absent. Uncus modrately large, thick to rather slender, clothed with sparse short hairs,

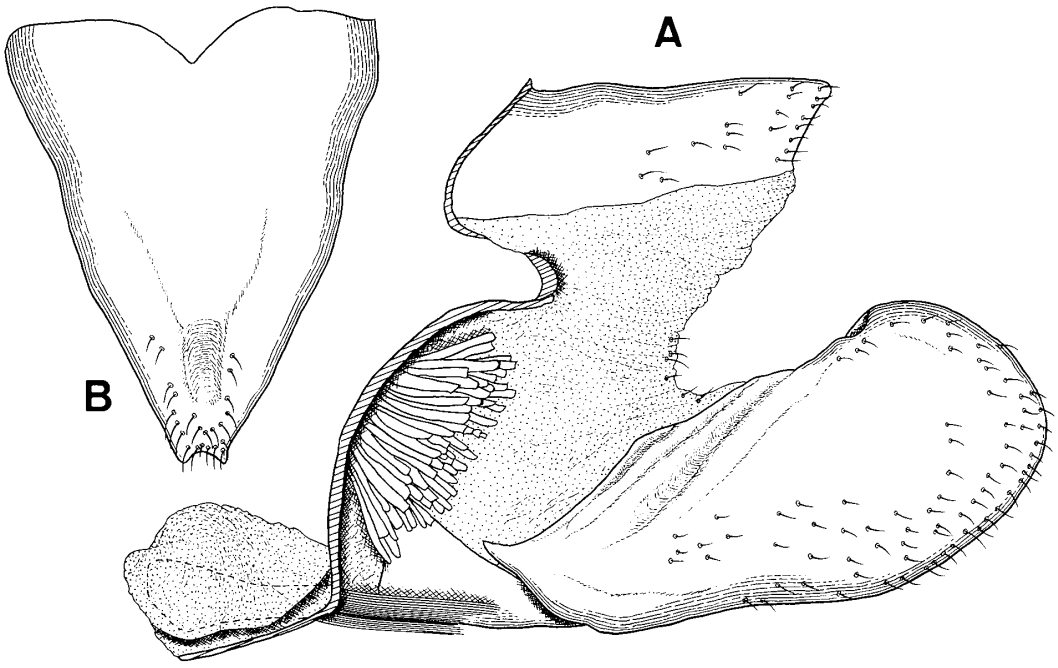

Fig. 100. Male 8th abdominal segment of *Spilarctia seriatopunctata* (MOTSCHULSKY). A. Eighth abdominal segment in lateral view; B. Eighth sternum in ventral view.

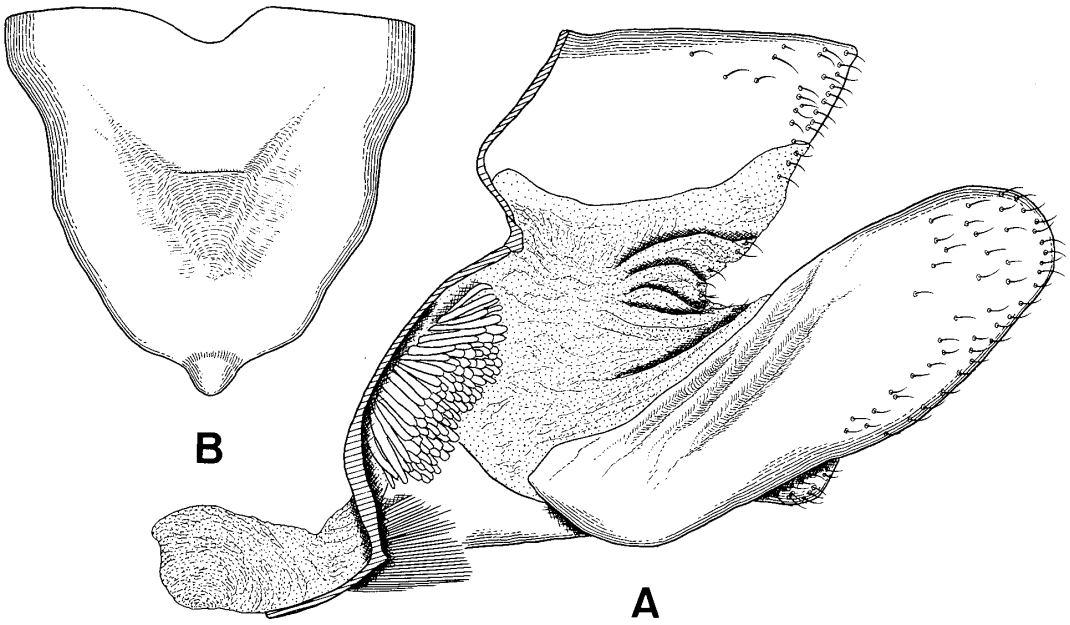

Fig. 101. Male 8th abdominal segment of *Spilarctia subcarnea* (WALKER). A. Eighth abdominal segment in lateral view; B. Eighth sternum in ventral view.

posterior 1/2 nearly straight and gradually curved ventrally to apex which is weakly or sharply pointed, in *bifasciata* basal portion of uncus strongly swollen dorsally. Vinculum moderately large, 1/4－2/5 as deep as ring; saccus 1/4－1/3 as long as height of ring. Valva usually simple and moderately large; costa almost disappearing except its extreme base which is continuous to transtilla; distal portion of harpe+ampulla variable in shape and bearing 1－3 short or long processes, ventroproximal portion of harpe+ampulla usually produced inwardly to form a distinct process; anellifer occupying basal 1/2－2/3 of inner wall; sacculus narrow and continuous to ventroproximal portion of harpe+ampulla or almost disappearing proximally. Juxta rather small and nearly trapezoid; basal 1/2 swollen, weakly or strongly excavated at lateral side of posterior 1/2, with emarginated apical margin. Phallus large; suprazonal sheath usually weakly curved dorsally, with several short processes on ventrodistal portion of right lateral wall of aedeagus, but in *postrubida* with a short process on distal portion of left lateral wall of aedeagus; subzonal sheath long, 1/2－3/5 as long as aedeagus; coecum penis moderately large; vesica usually broad, 2/5－3/5 as long as aedeagus, everted posteriorly or posterodorsally, with 2－3 groups of short spines and several congregations of minute spinules.

Female external genitalia: Seventh abdominal tergum large and well sclerotized; lateral membranous areas of 7th segment much expanded ventrally to reduced sternum; 7th sternum reduced, occupying anteroventral 1/3－2/3 of the venter of segment; broadly membranous area present on its posterior portion; in *bifasciata* a pair of very large sclerites which are clothed with many irregular row of furrows on its entire surface, present on posterior 1/2 of lateral membranous areas. Eighth abdominal segment 3/7 as high as 7th segment; 8th abdominal tergum completely fused with its sternum. Lamella antevaginalis in ventral view thick, rather wide, continuing to

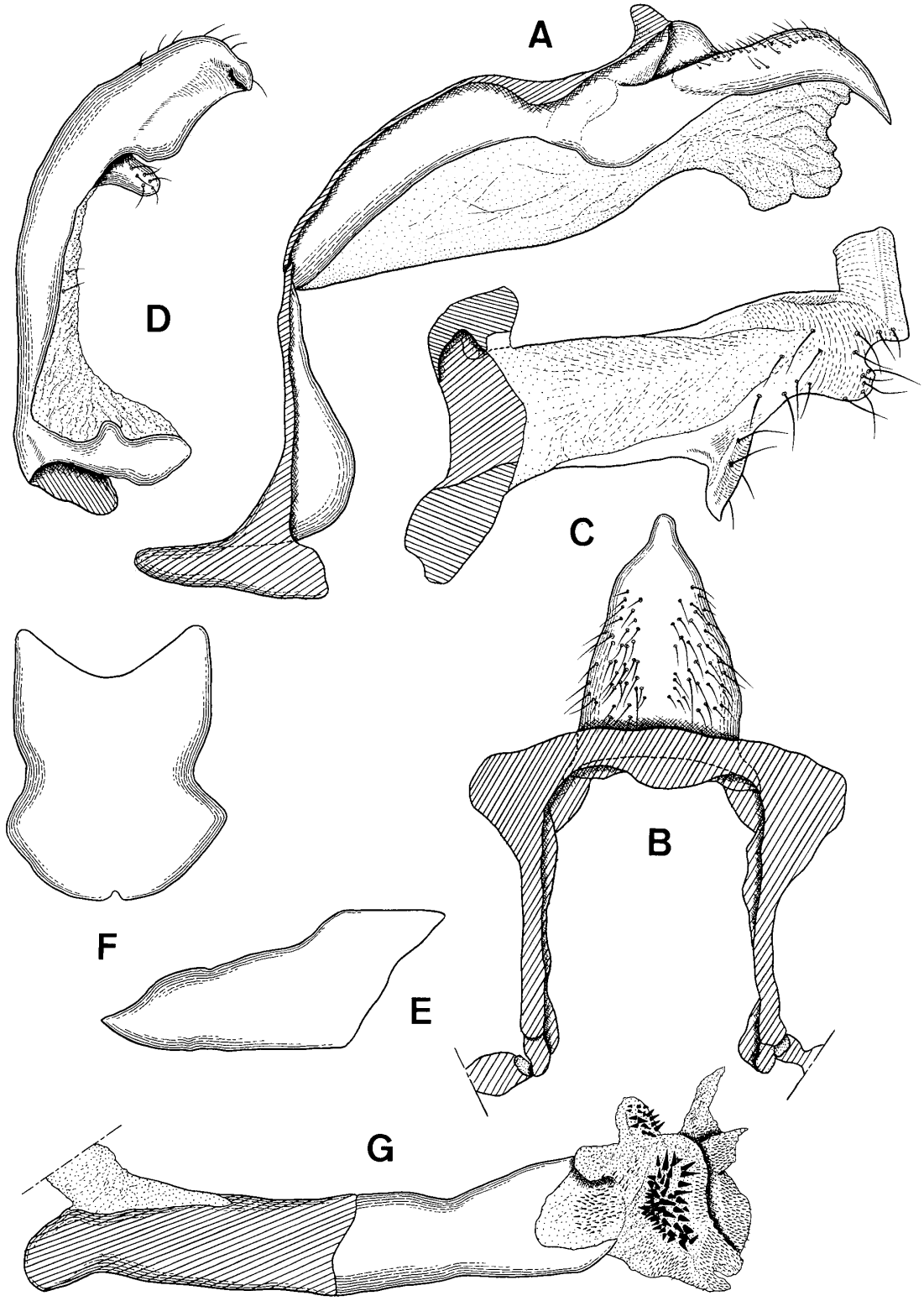

Fig. 102. Male external genitalia of *Spilarctia lutea* (HUFNAGEL). A. Ring in lateral view; B. Dorsum in dorsal view; C. Inside of right valva; D. *Ditto* in dorsal view; E. Juxta in lateral view: F. *Ditto* in ventral view; G. Phallus in lateral view.

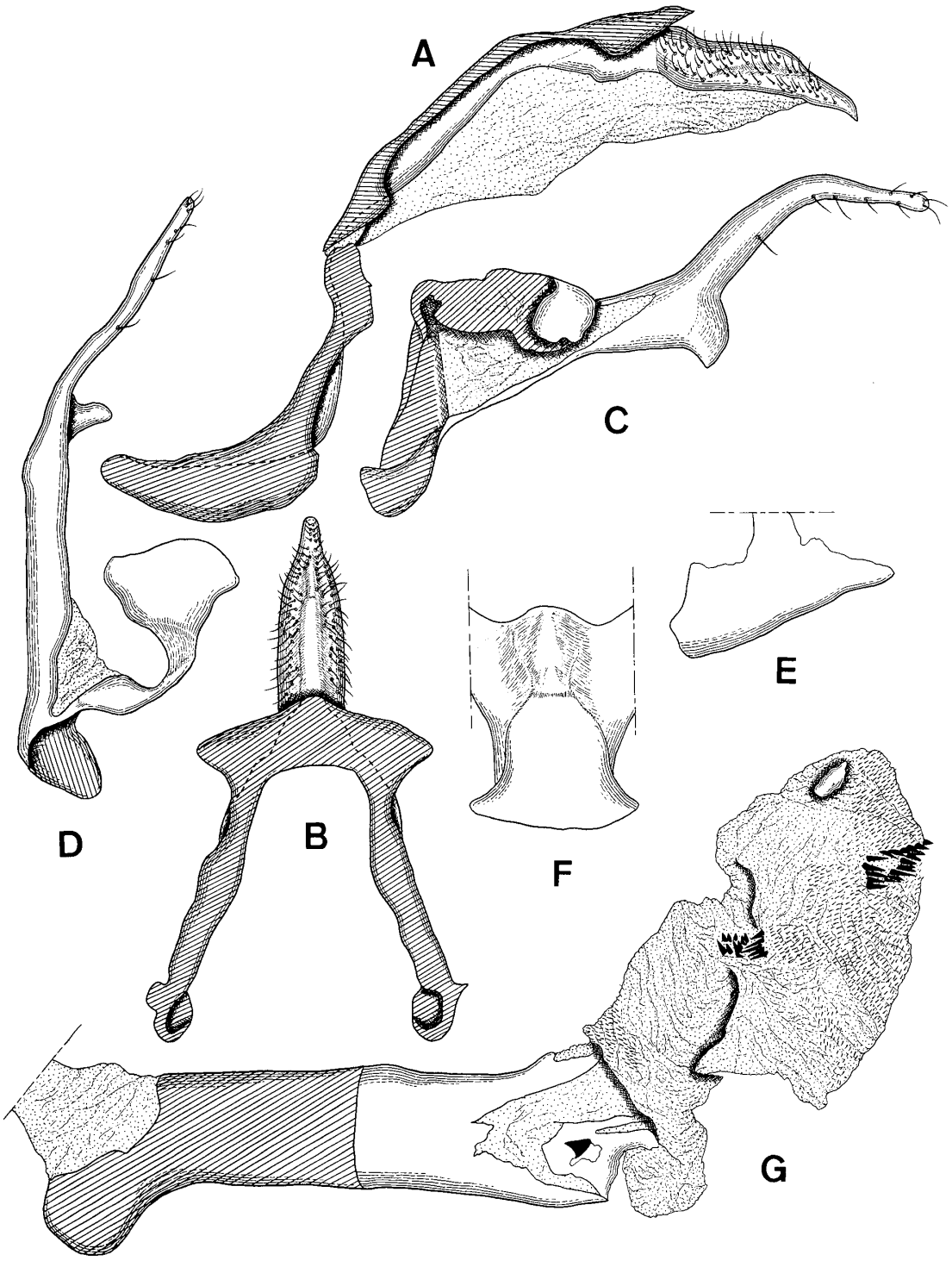

Fig. 103. Male external genitalia of *Spilarctia postrubida* (WILEMAN). A. Ring in lateral view : B. Dorsum in dorsal view : C. Inside of right valva : D. *Ditto* in dorsal view ; E. Juxta in lateral view ; F. *Ditto* in ventral view ; G. Phallus in lateral view.

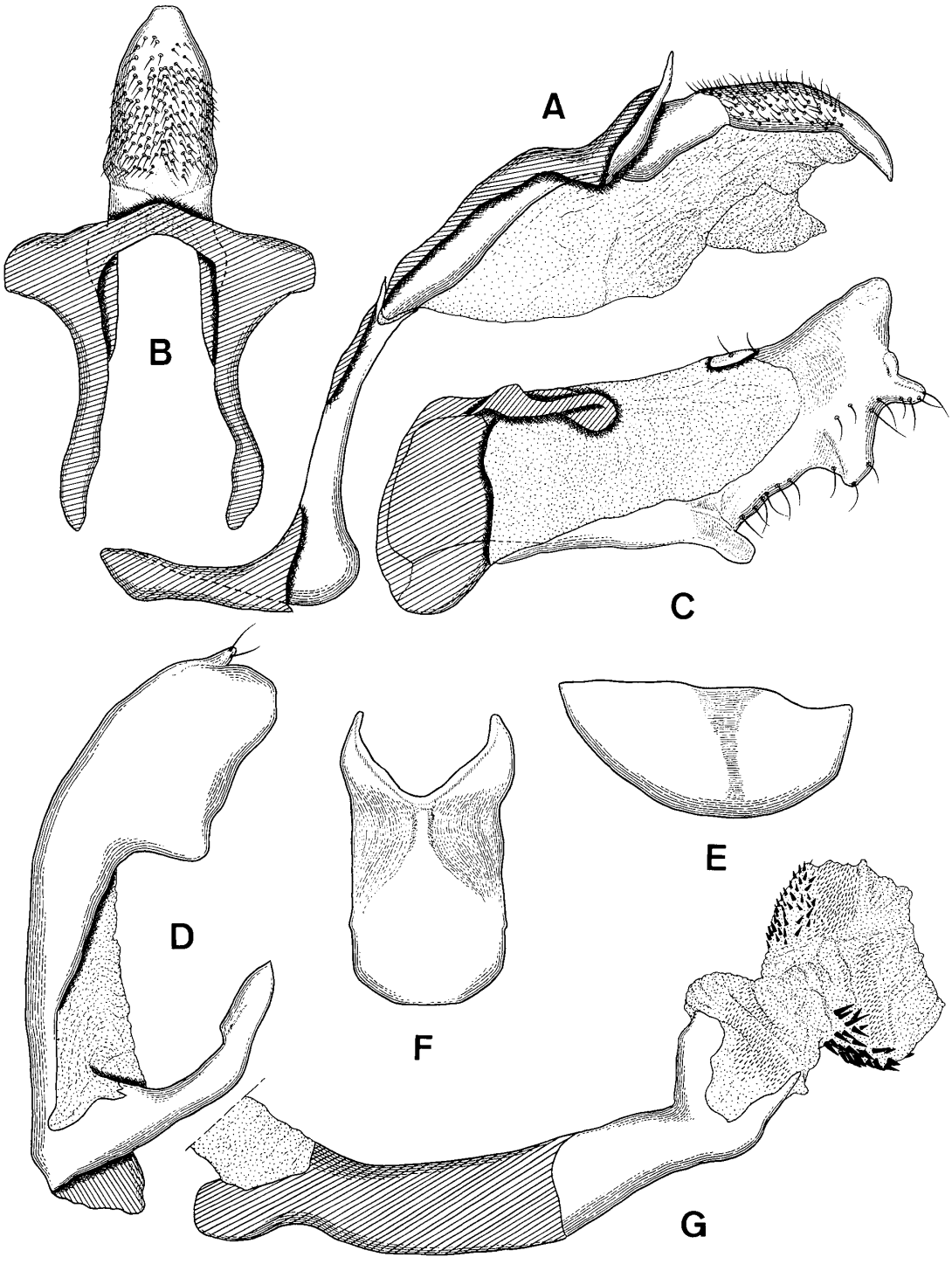

Fig. 104. Male external genitalia of *Spilarctia seriatopunctata* (MOTSHULSKY). A. Ring in lateral view ; B. Dorsum in dorsal view ; C. Inside of right valva ; D. *Ditto* in dorsal view ; E. Juxta in lateral view ; F. *Ditto* in ventral view : G. Phallus in lateral view.

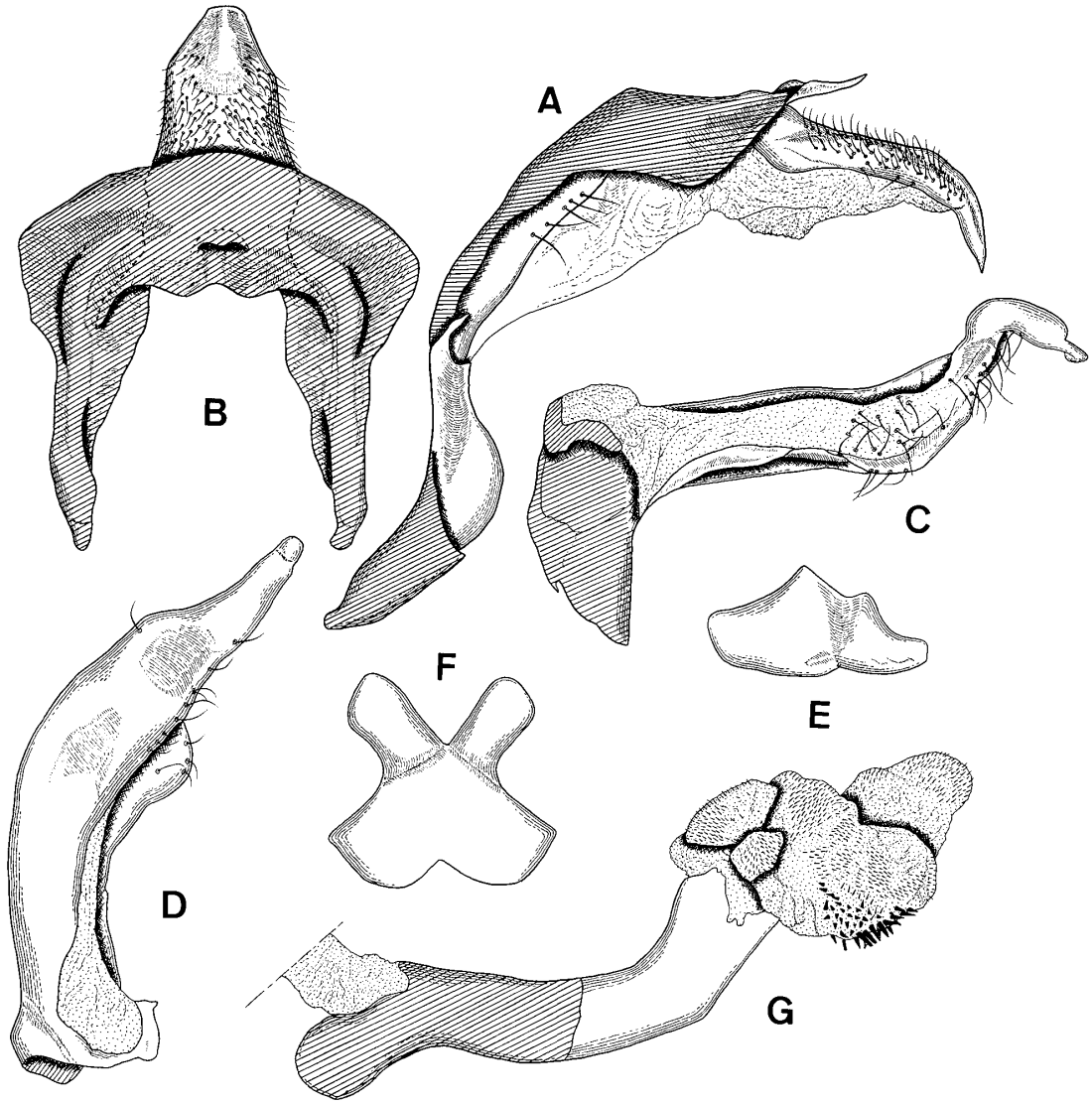

Fig. 105. Male external genitalia of *Spilarctia subcarnea* (WALKER). A. Ring in lateral view; B. Dorsum in dorsal view; C. Inside of right valva; D. *Ditto* in dorsal view; E. Juxta in lateral view; F. *Ditto* in ventral view; G. Phallus in lateral view.

posterior portion of 7th venter, its lateral portions weakly or strongly concaved. Lamella postvaginalis wide, completely fused with lamella antevaginalis laterally. Ostium bursae lenticular. Apophysis anterioris short, weakly curved dorsally, 1/5 as long as height of 8th segment. Papilla analis in lateral view nearly semicircular, with many short hairs and also bearing dense minute short hairs on its dorsal surface; apophysis posterioris 2 × as long as apophysis anterioris.

Female internal reproductive organs: Anterior end of bursa copulatrix reaching to anterior margin of 7th segment. Sinus vaginalis moderately large; antrum short and thick, sometimes with narrow membranous slit. Ductus bursae short, membranous on its left lateral surface but almost sclerotized on right lateral surface, directed or

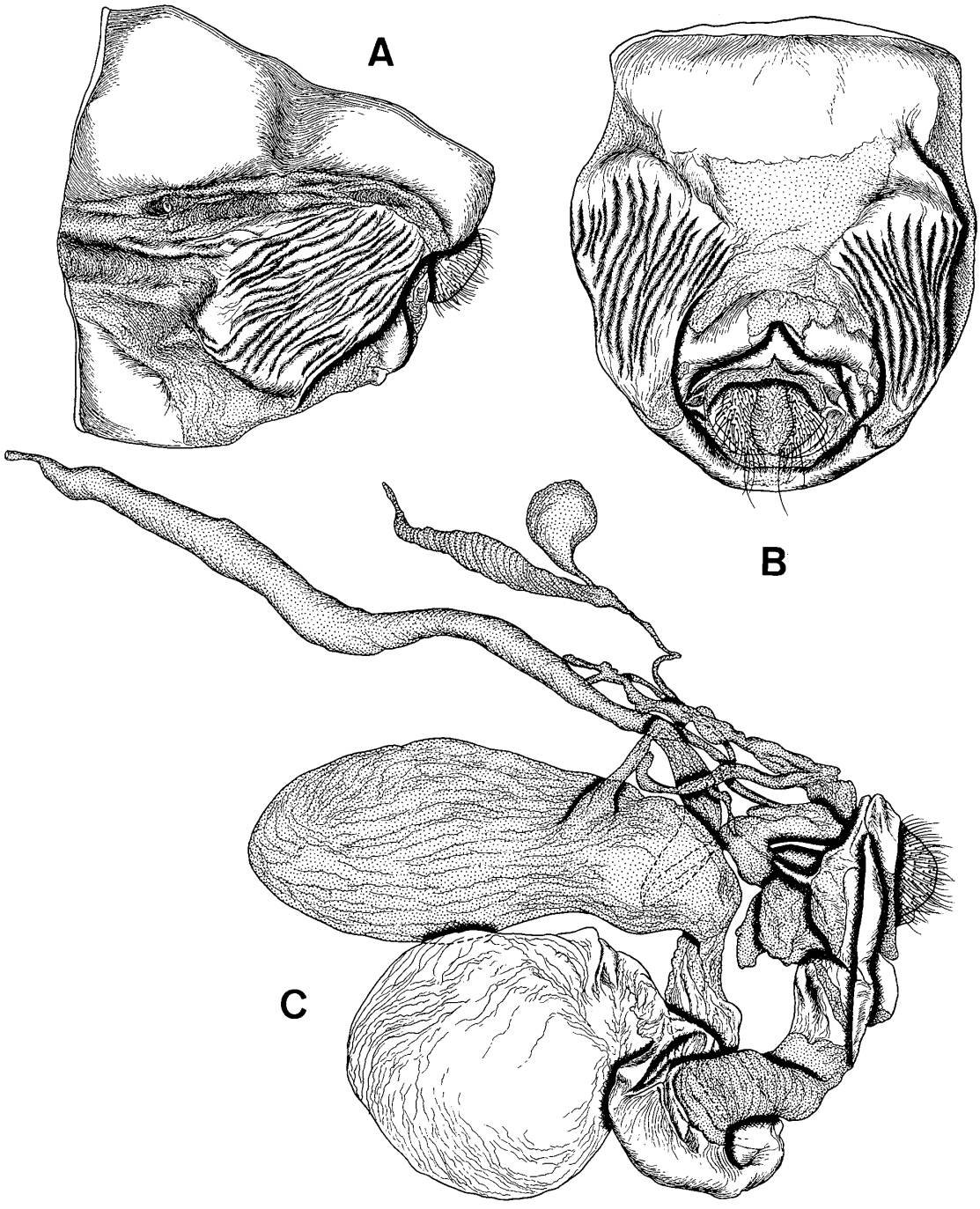

Fig. 106. Female external genitalia and internal reproductive organs of *Spilarctia bifasciata* MOORE. A. External genitalia in lateral view ; B. *Ditto* in posteroventral view ; C. Internal reproductive organs in lateral view (left).

curved ventrally, 1/5 as long as bursa copulatrix. Cervix bursae moderately large and weakly sclerotized. Corpus bursae membranous and globular, 1/2 as long as bursa copulatrix, without signa. Lower part of ductus seminalis arising from right ventral side of cervix bursae, directing dorsally, and its ventral 1/2 weakly or strongly sclerotized ; bulla seminalis large, nearly oval, situated above corpus bursae ; upper

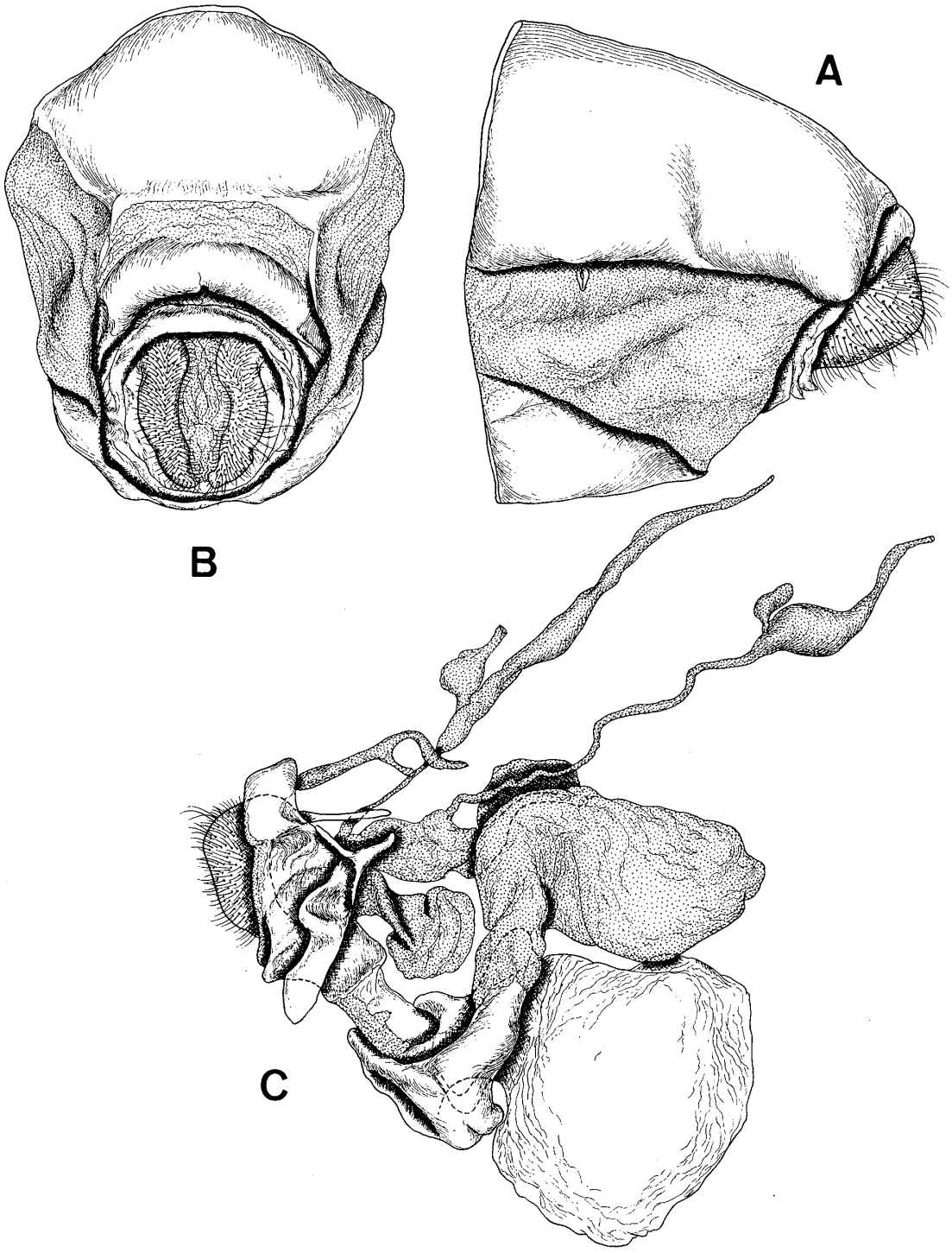

Fig. 107. Female external genitalia and internal reproductive organs of *Spilarctia lutea* (HUFNAGEL). A. External genitalia in lateral view ; B. *Ditto* in posteroventral view ; C. Internal reproductive organs in lateral view (right).

part of ductus seminalis arising from posterior 1/4 – 1/3 of left dorsolateral surface of bulla seminalis and attached to ventral surface of vestibulum. Spermatheca small.

Glandula sevacea moderately long and rather slender, slightly longer than bursa copulatrix. Scent gland more or less complicated, with 1－3 branches.

This genus has hitherto included most species of the genera *Thanatarctia* and *Eospilarctia*. The wing marking of this genus is basically the same as those of *Thanatarctia and Eospilarctia*. This resemblance may be ascribed to a symplesiomorphy. On the contrary the structural patterns of male and female genitalia are quite different among these genera.

This genus is characterized by the following autapomorphies: In male genitalia, a ventroproximal process of harpe+ampulla of valva, lateral membranous area of the 8th abdominal segment bearing a pair of valva-like secondary sclerites; in female genitalia, the desclerotization of posterior portion of 7th abdominal venter and the sclerotization of basal 1/2 of lower part of ductus seminalis.

I examined the genitalia of the following species.

1. *Spilarctia alba* (BREMER & GREY, 1853) (Fig. 116A)
   Chelonia alba BREMER & GREY, 1853, Schmett. N. China: 15.
   Distribution: West China to Korea and Taiwan.
2. *Spilarctia aurocostata* (OBERTHÜR, 1911) (Fig. 116B)
   Spilosoma aurocostata OBERTHÜR, 1911, *Et. Lepid. com.* **5** (1): 337.
   Distribution: China.
3. *Spilarctia bifasciata* BUTLER, 1881 (Figs. 106, 116C, D)
   Spilarctia bifasciata BUTLER, 1881, *Trans. Ent. Soc. Lond.* **1881**: 7.
   Distribution: Japan (Hokkaido and Honshu)
4. *Spilarctia bisecta* (LEECH, 1888) (Fig. 116E)
   Spilosoma bisecta LEECH, 1888, *Proc. zool. Soc. Lond.* **1888**: 618, pl.31, fig. 3.
   Distribution: East China and Japan (Honshu, Shikoku and Kyushu)
5. *Spilarctia casigneta* (KOLLER, [1844] 1848) (Fig. 116F)
   Euprepia casigneta KOLLER, [1844] 1848, in HUGEL, Kaschmir und das Reich der Siek 4: 466, pl. 21, fig. 1.
   Distribution: Kashimir, Tibet, North India, West China and Taiwan.
6. *Spilarctia clava* (WILEMAN, 1910) (Fig. 116G)
   Diacrisia clava WILEMAN, 1910, *Entomologist* **43**: 189.
   Distribution: Taiwan.
7. *Spilarctia contaminata* (WILEMAN, 1910) (Fig. 116H)
   Aloa contaminata WILEMAN, 1910, *Entomologist* **43**: 247.
   Distribution: Taiwan.
8. *Spilarctia fumida* (WILEMAN, 1910) (Fig. 117A, B)
   Diacrisia fumida WILEMAN, 1910, *Entomologist* **43**: 245.
   Distribution: Taiwan.
9. *Spilarctia irregularis* (ROTHSCHILD, 1910) (Fig. 117C, D)
   Diacrisia irregularis ROTHSCHILD, 1910, *Novit. zool.* **17**: 125.
   Distribution: West China.
10. *Spilarctia kikuchii* (MATSUMURA, 1927) (Fig. 117E, F)
    Diacrisia kikuchii MATSUMURA, 1927, *J. Coll. Agric. Hokkaido imp. Univ.* **19** (1):

54, pl.4, fig. 26.
Distribution: Taiwan.

11. *Spilarctia leopardina* (KOLLER, [1844] 1848) (Fig. 117G, H)
Euprepia leopardina KOLLER, [1844] 1848, in HUGEL, Kaschmir und das Reich der Siek 4: 467, pl.21, 1422.
Distribution: Kashmir, Nepal and West China.
12. *Spilarctia lutea* (HÜFNAGEL, 1766) (Figs. 102, 107, 118A, B)
Phalaena lutea HÜFNAGEL, 1766, Berlin. Mag. 2: 412.
Distribution: Palaearctic region. Japan (Hokkaido, Honshu and Kyushu)
13. *Spilarctia multiguttata* (WALKER, 1855) (Fig. 118C, D)
Hypercompa multiguttata WALKER, 1855, List Specimen lepid. insects Colln. Br. Mus. 3: 657.
Distribution: Kashmir, Nepal, Bhutan, Sikkim, Assam, Cambodia and West China.
14. *Spilarctia obliqua* (WALKER, 1855) (Fig. 118G, H)
Spilosoma obliqua WALKER, 1855, List Specimen lepid Insects Colln Br. Mus 3: 679.
Distribution: Nepal and North India.
15. *Spilarctia obliquizonata* (MIYAKE, 1910) (Fig. 118E, F)
Diacrisia obliquizonata MIYAKE, 1910, *J. Coll. Agric. Imp. Univ. Tokyo,* **2** (3): 208.
Distribution: Japan (Hokkaido, Honshu, Shikoku and Kyushu).
16. *Spilarctia postrubida* (WILEMAN, 1910) (Figs. 103, 119A)
Aloa postrubida WILEMAN, 1910, *Entomologist* **43**: 246.
Distribution: Taiwan and Japan (Iriomote Is. and Ishigaki Is.)
17. *Spilarctia robusta* (LEECH, 1899) (Fig. 119C, D)
Spilosoma robusta LEECH, 1899, *Trans. ent. Soc. Lond.* **1899**: 149.
Distribution: West China and Malaysia.
18. *Spilarctia rubilinea* (MOORE, 1865) (Fig. 119B)
Spilosoma rubilinea MOORE, 1865, *Proc. zool. Soc. Lond.* **1865**: 810.
Distribution: Nepal, Bhutan, Sikkim, Assam, Burma and West China.
19. *Spilarctia seriatopunctata* (MOTSHULSKY, 1860) (Figs. 100, 104)
Spilosoma seriatopunctata MOTSCHULSKY, 1860, *Etud. Ent.* **9**: 31.
Distribution: Amur, Ussuri, Korea, China, Taiwan and Japan.
20. *Spilarctia subcarnea* (WALKER, 1855) (Figs. 101, 105)
Spilosoma subcarnea WALKER, 1855, List Specimen lepid. Insects Colln Br. Mus. 3: 675.
Distribution: China, Korea, Taiwan and Japan.
21. *Spilarctia subtestacea* (ROTHSCHILD, 1910) (Fig. 119E, F)
Diacrisia subtestacea ROTHSCHILD, 1910, *Novit. Zool.* **17**: 137.
Distribution: Taiwan.
22. *Spilarctia wilemanni* (ROTHSCHILD, 1914) (Fig. 119G, H)
Diacrisia wilemanni ROTHSCHILD, 1914, in SEITZ, Gross-Schmett. Erde 10: 249, pl. 19, fig. f.
Distribution: Taiwan.

(to be continued)

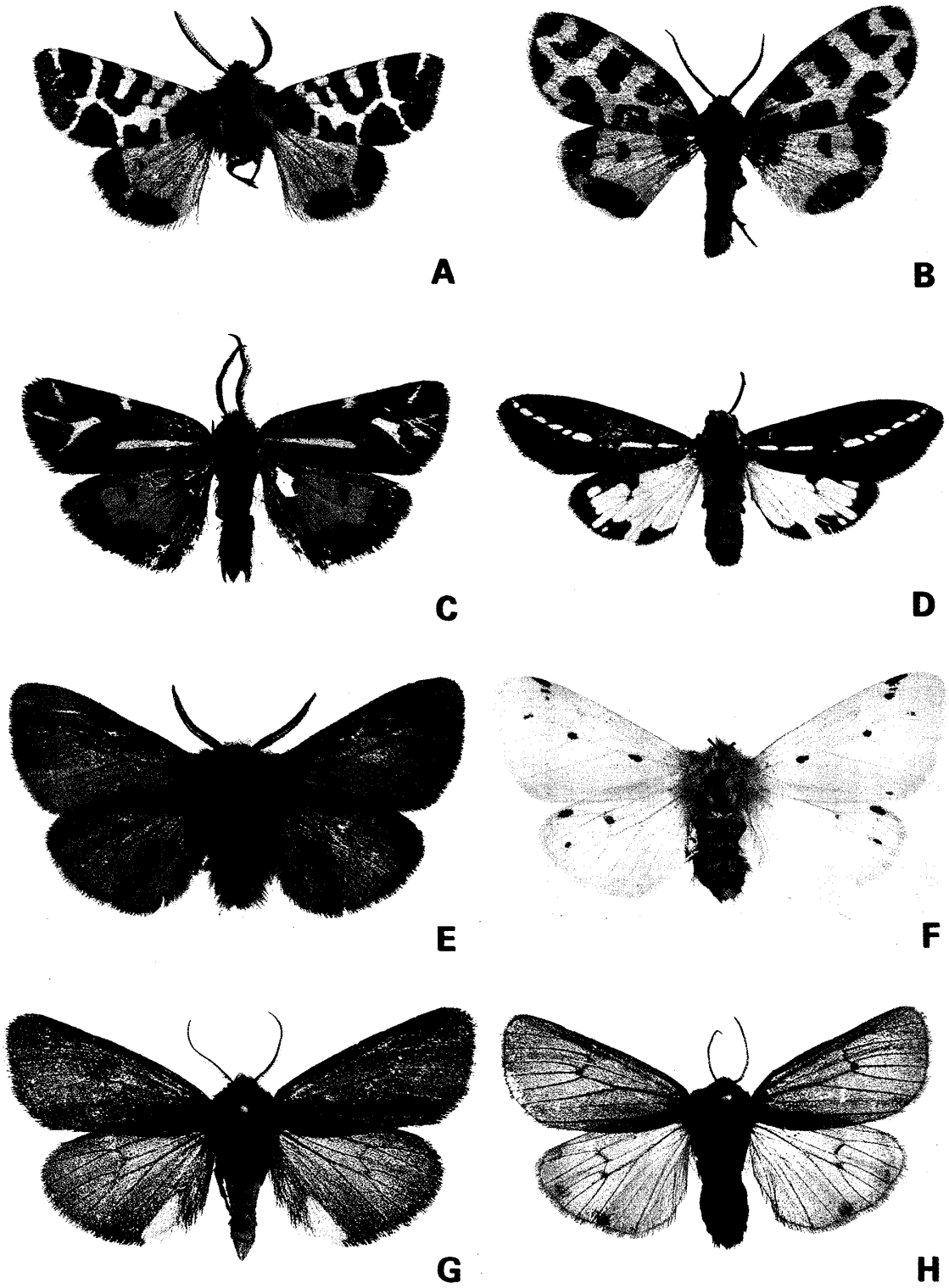

Fig. 108. A. *Artimelia latreillii* (GODART), male ; B. *Micrarctia kindermanni* (STRAND), male ; C. *Micrarctia y-albula* (OBERTHÜR), male ; D. *Nannoarctia integra* (WALKER), male ; E. *Diaphora mendica* (CLERK), male ; F. *Ditto*, female ; G. *Epatolmis caesarea* (GOEZE), male ; H. *Phragmatobia fulginosa* (LINNAEUS), male.

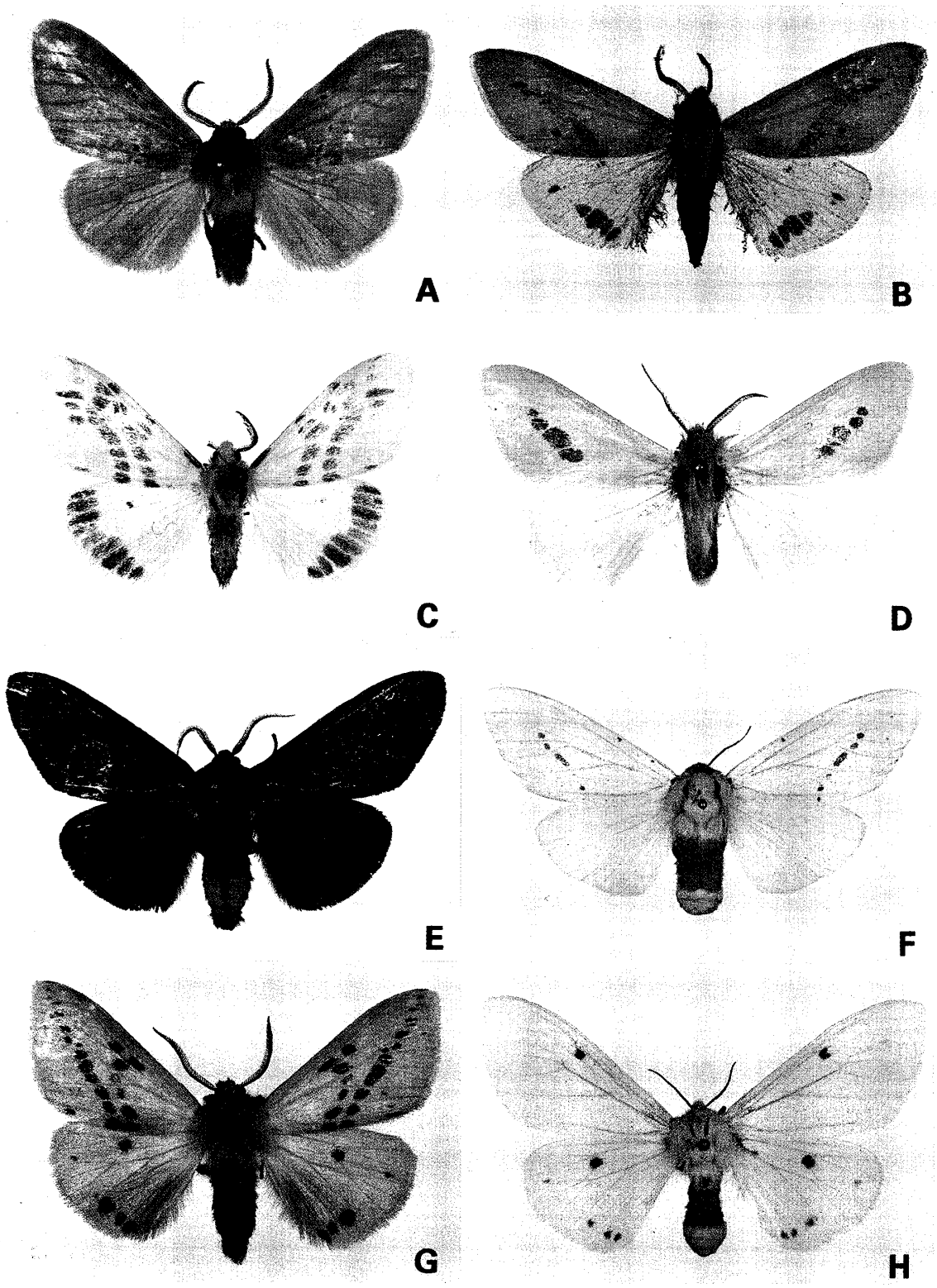

Fig. 109. A. *Thanatarctia flammeola* (MOORE), male ; B. *Thanatarctia flavalis* (MOORE), male ; C. *Thanatarctia flavens* (MOOR), male ; D. *Thanatarctia jankowskii* (OBERTHÜR), male ; E. *Thanatarctia imparilis* (BUTLER), male ; F. *Ditto*, female ; G. *Thanatarctia inaequalis* (BUTLER), male ; H. *Ditto*, female.

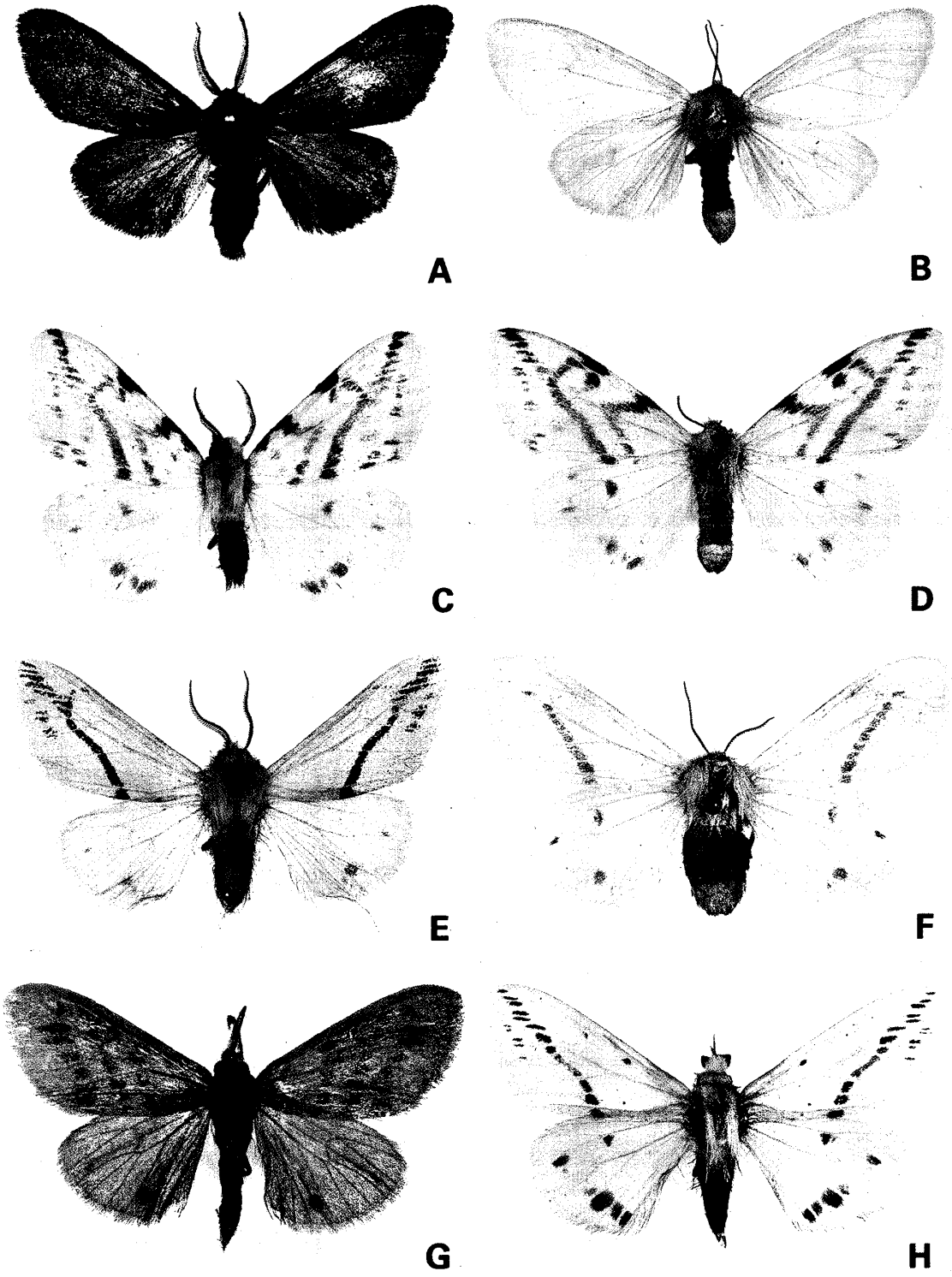

Fig. 110. A. *Thanatarctia infernalis* BUTLER, male ; B. *Ditto,* female ; C. *Thanatarctia multivittata* (MOORE), male ; D. *Ditto*, female ; E. *Thanatarctia obliquivitta* (MOORE), male ; F. *Ditto*, female ; G. *Thanatarctia punctilinea* (WILEMAN), male ; H. *Thanatarctia rhodophila* (WALKER), male.

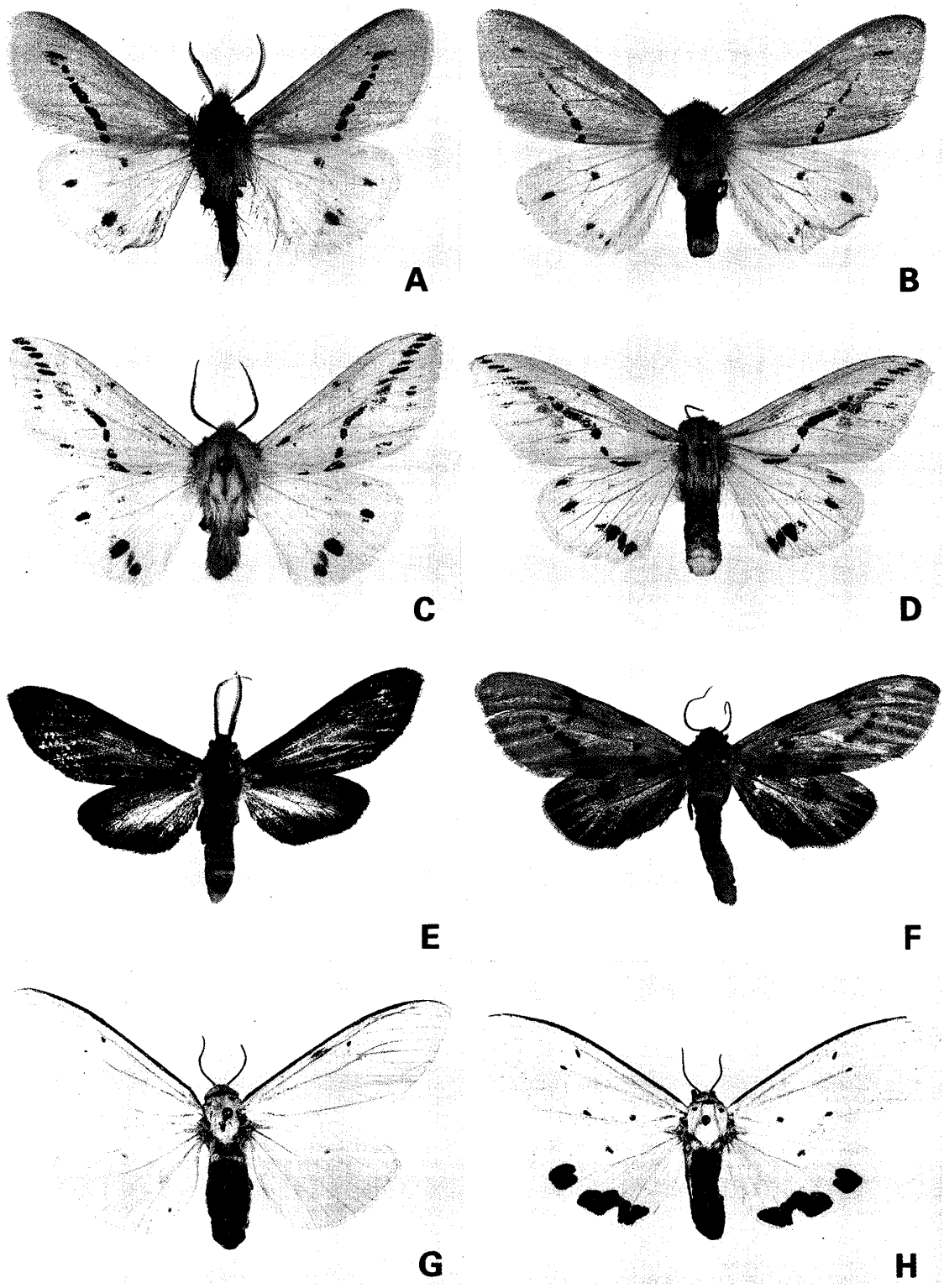

Fig. 111. A. *Thanatarctia rubitincta* (WALKER), male ; B. *Ditto*, female ; C. *Thanatarctia stigmata* (MOORE), male ; D. *Ditto*, female ; E. *Amasactoides solitaria* (WILEMAN), male ; F. *Ditto,* female ; G. *Amsacta cardinalis* (BUTLER), male ; H. *Ditto,* female.

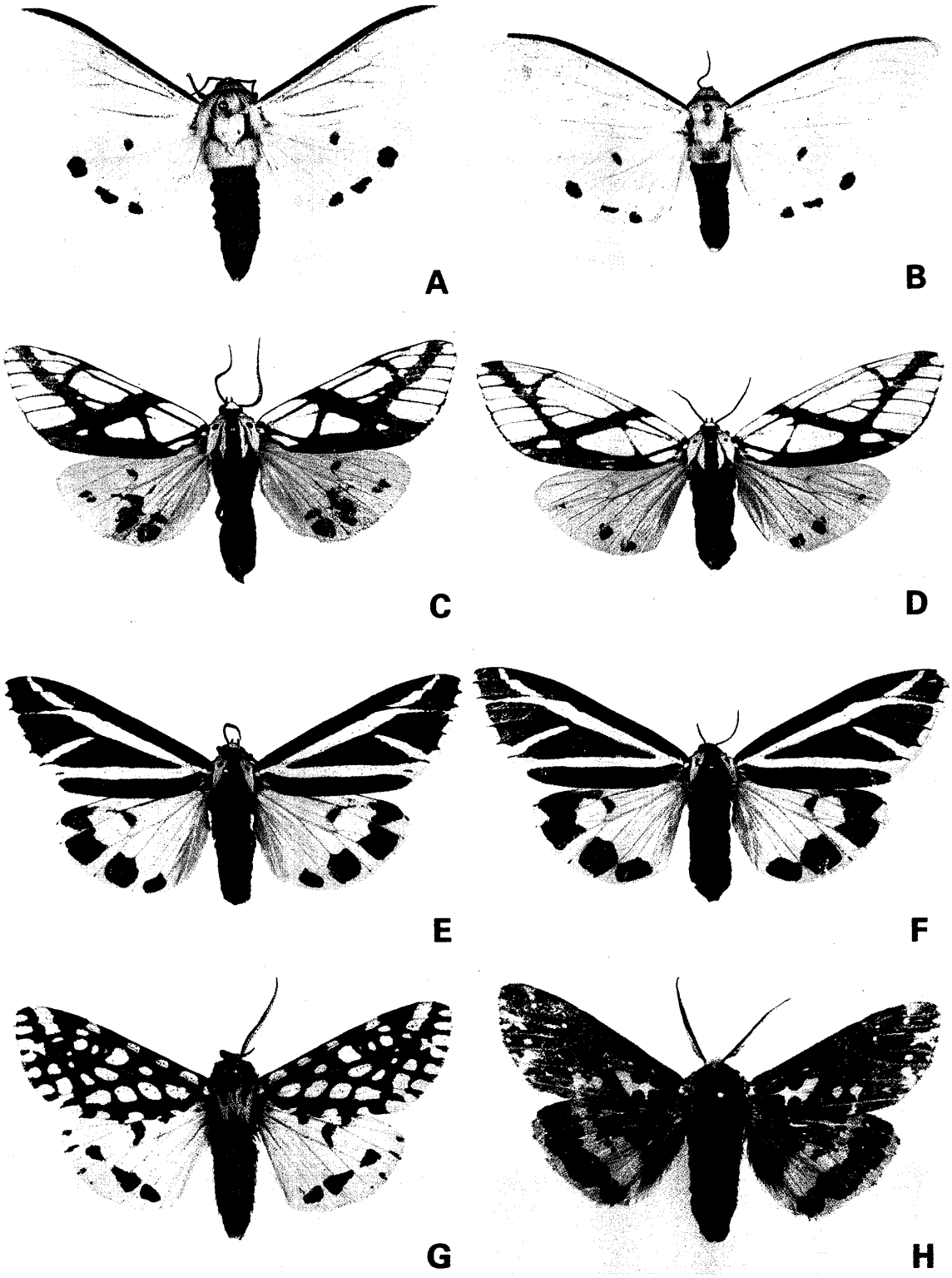

Fig. 112. A. *Amsacta lactinea* (CRAMER), male ; B. *Ditto*, female ; C. *Areas galactina* (HOEVEN), male ; D. *Ditto,* female ; E. *Areas imperialis* (KOLLAR), male ; F. *Ditto,* female ; G. *Alphaea fulvohirta* WALKER, male ; H. *Alphaea imbuta* (WALKER), male.

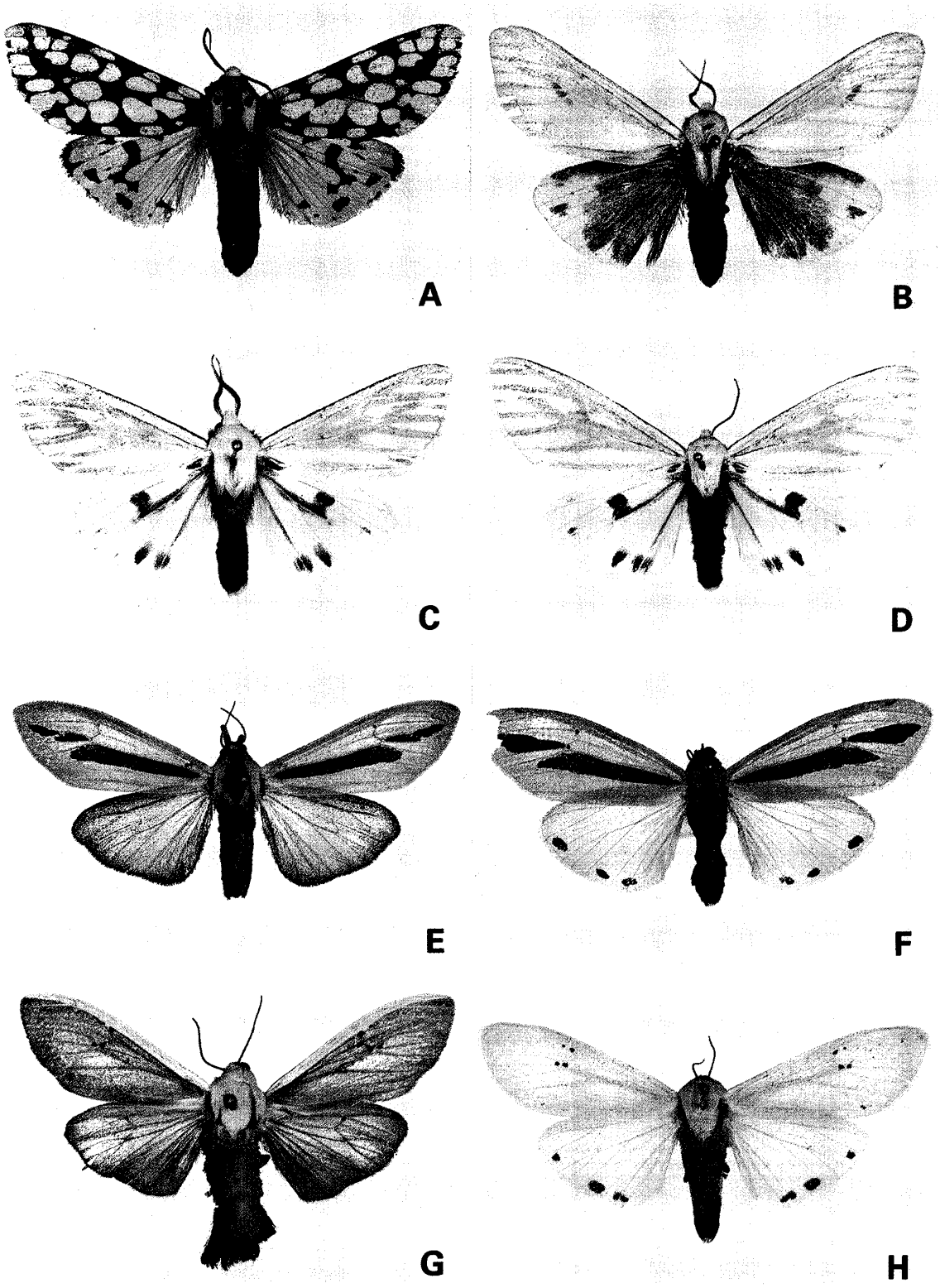

Fig. 113. A. *Alphaea impleta* (WALKER), male ; B. *Argyarctia fuscobasalis* (MATSUMURA), male ; C. *Argyarctia reikoae* (KISHIDA), male ; D. *Ditto,* female ; E. *Creatonotos gangis* (LINNAEUS), male ; F. *Ditto* famale ; G. *Creatonotos transiens* (WALKER), male ; H. *Ditto,* female.

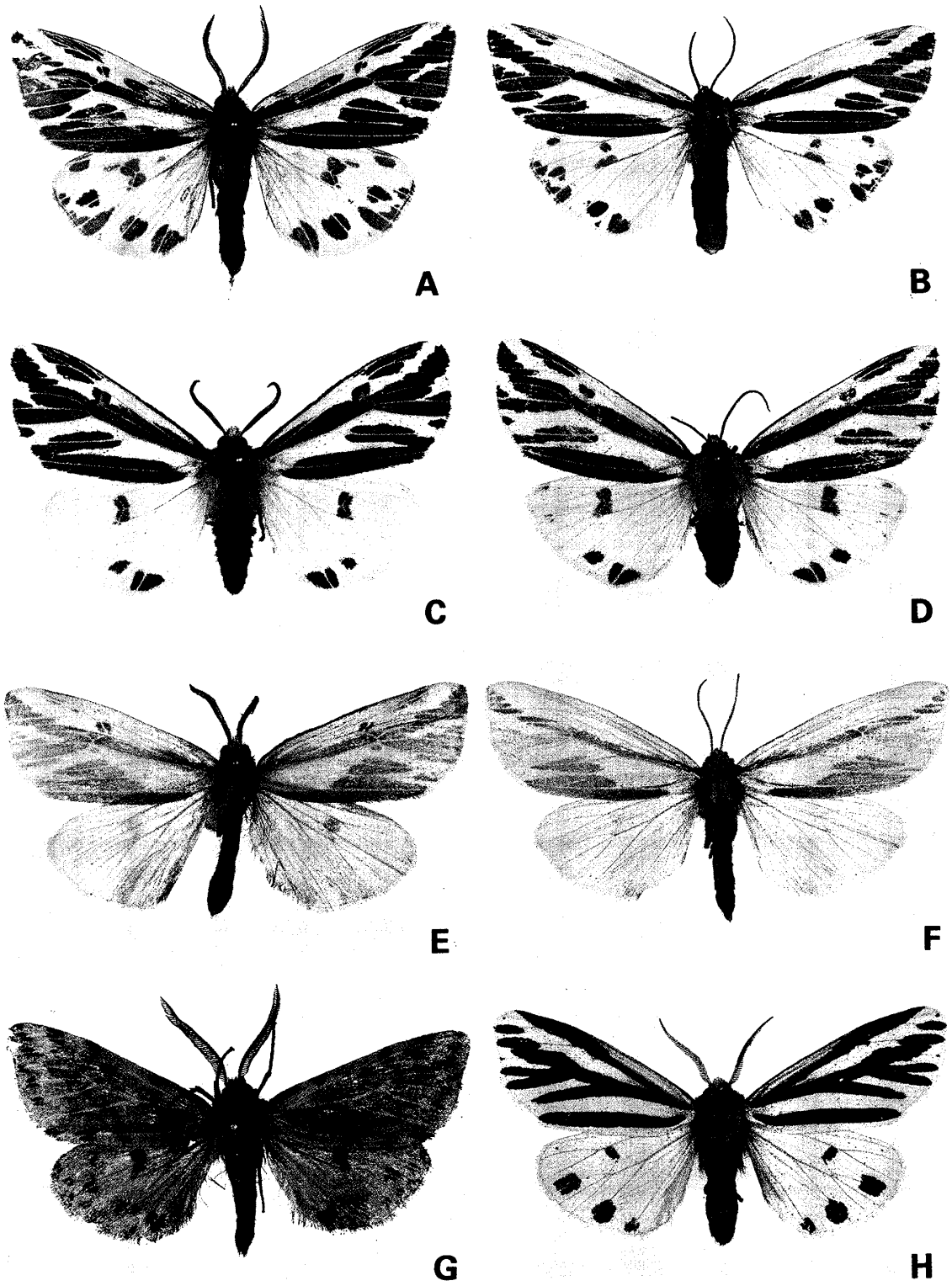

Fig. 114. A. *Eospilarctia jordansii* (DANIEL), male ; B. *Ditto,* female ; C. *Eospilarctia lewisii* (BUTLER), male ; D. *Ditto,* female ; E. *Eospilarctia nehallenia* (OBERTHÜR), male ; F. *Ditto,* female ; G. *Eospilarctia neurographa* (HAMPSON), male ; H. *Cladarctia quadriramosa* (KOLLER), male.

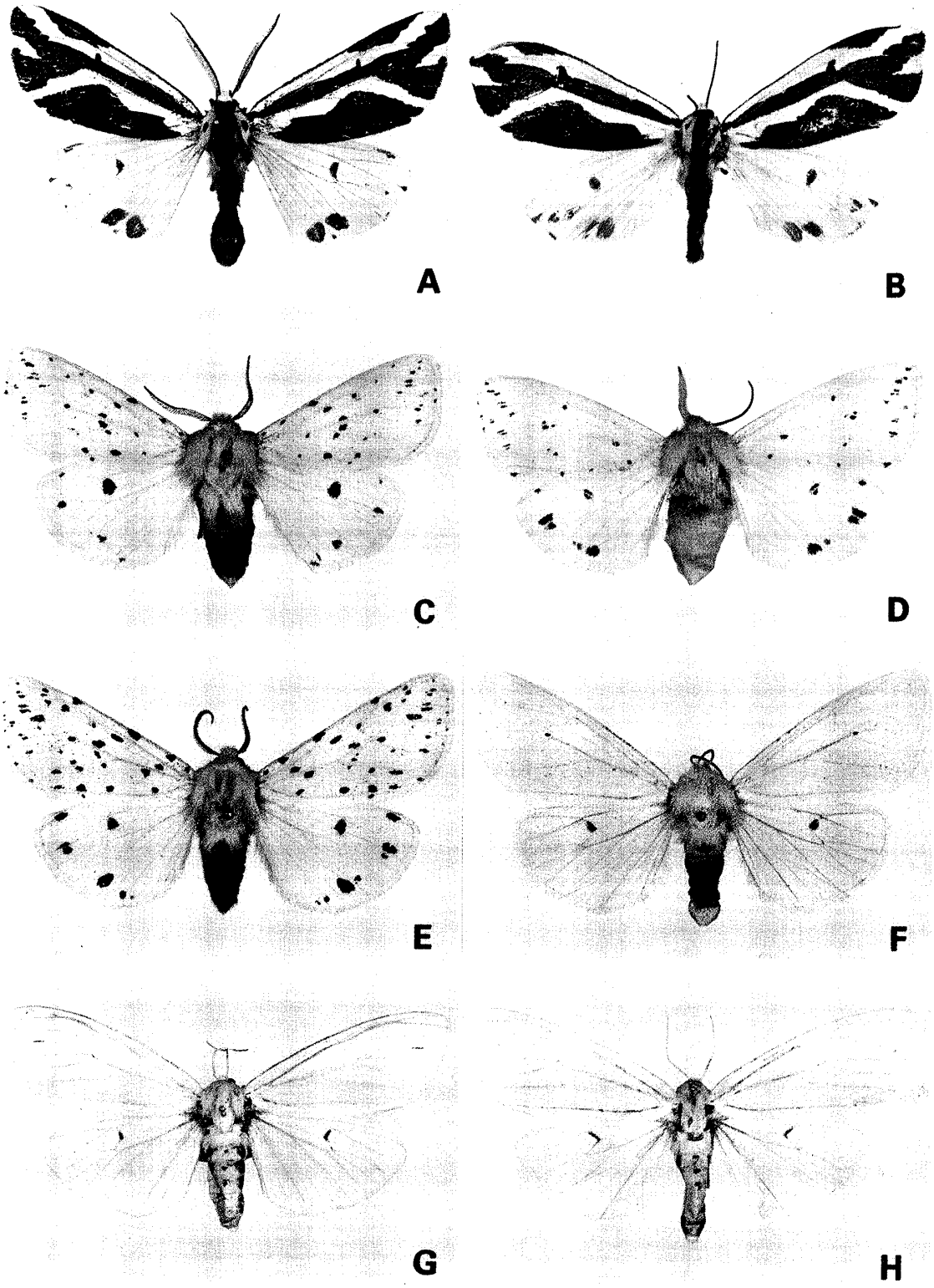

Fig. 115. A. *Paraspilarctia magna* (WILEMAN), male ; B. *Ditto,* female ; C. *Spilosoma lubricipedum* (LINNAEUS), male ; D. *Ditto,* female ; E. *Spilosoma punctarium* (STOLL), male ; F. *Ditto*, female ; G. *Chionarctia nivea* (MENETRIES), male ; H. *Ditto,* female.

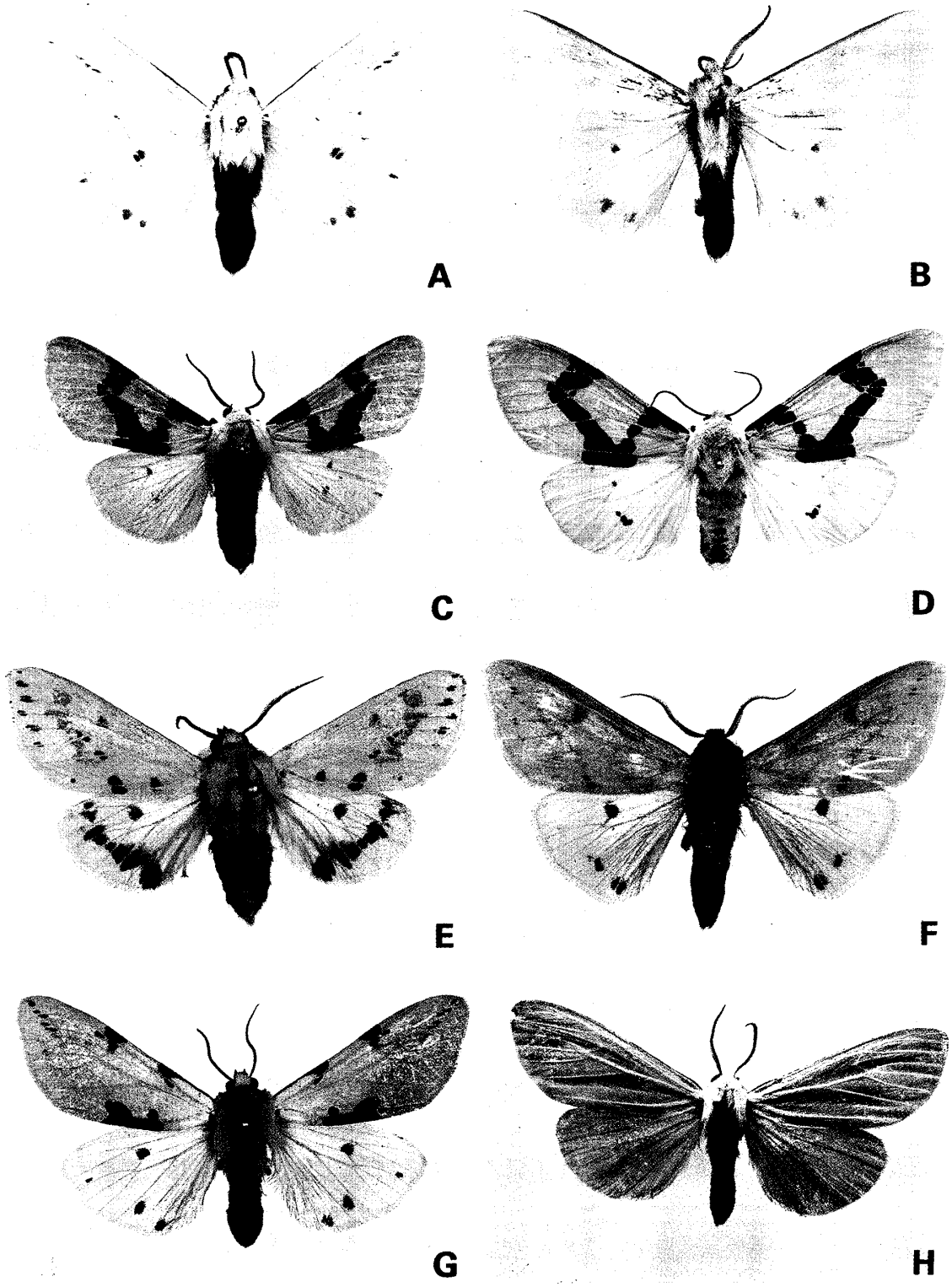

Fig. 116. A. *Spilarctia alba* (BREMER & GREY), male ; B. *Spilarctia aurocostata* (OBERTHÜR), male ; C. *Spilarctia bifasciata* (LEECH), male ; D. *Ditto,* female ; E. *Spilarctia bisecta* (LEECH), male ; F. *Spilarctia casigneta* (KOLLER), male ; G. *Spilarctia clava* (WILEMAN), male ; H. *Spilarctia contaminata* (WILEMAN), male.

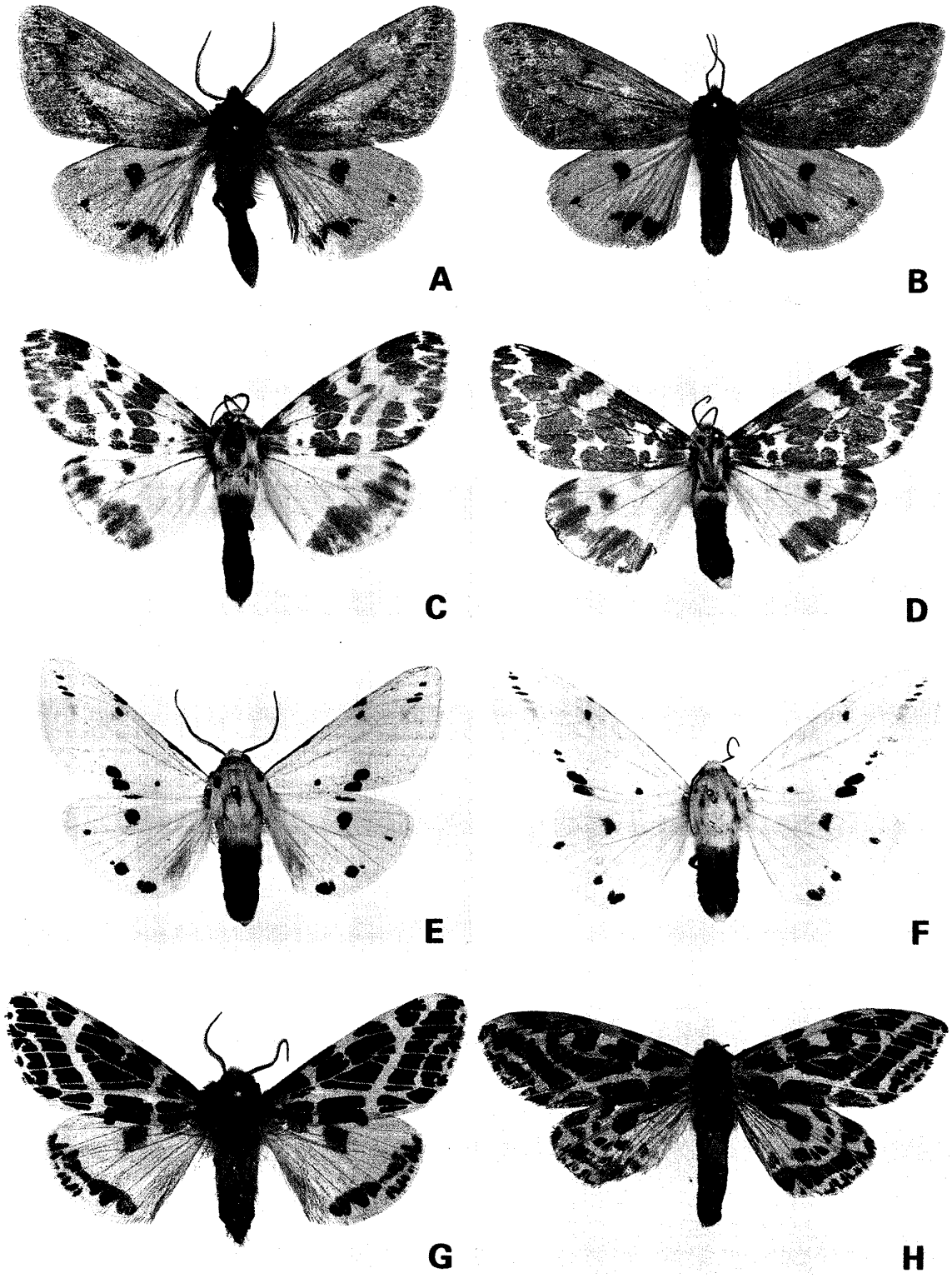

Fig. 117. A. *Spilarctia fumida* (WILEMAN), male ; B. *Ditto,* female ; C. *Spilarctia irregularis* (ROTHSCHILD), male ; D. *Ditto,* female ; E. *Spilarctia kikuchii* (MATSUMURA), male ; F. *Ditto,* female ; G. *Spilarctia leopardina* (KOLLER), male ; H. *Ditto,* female.

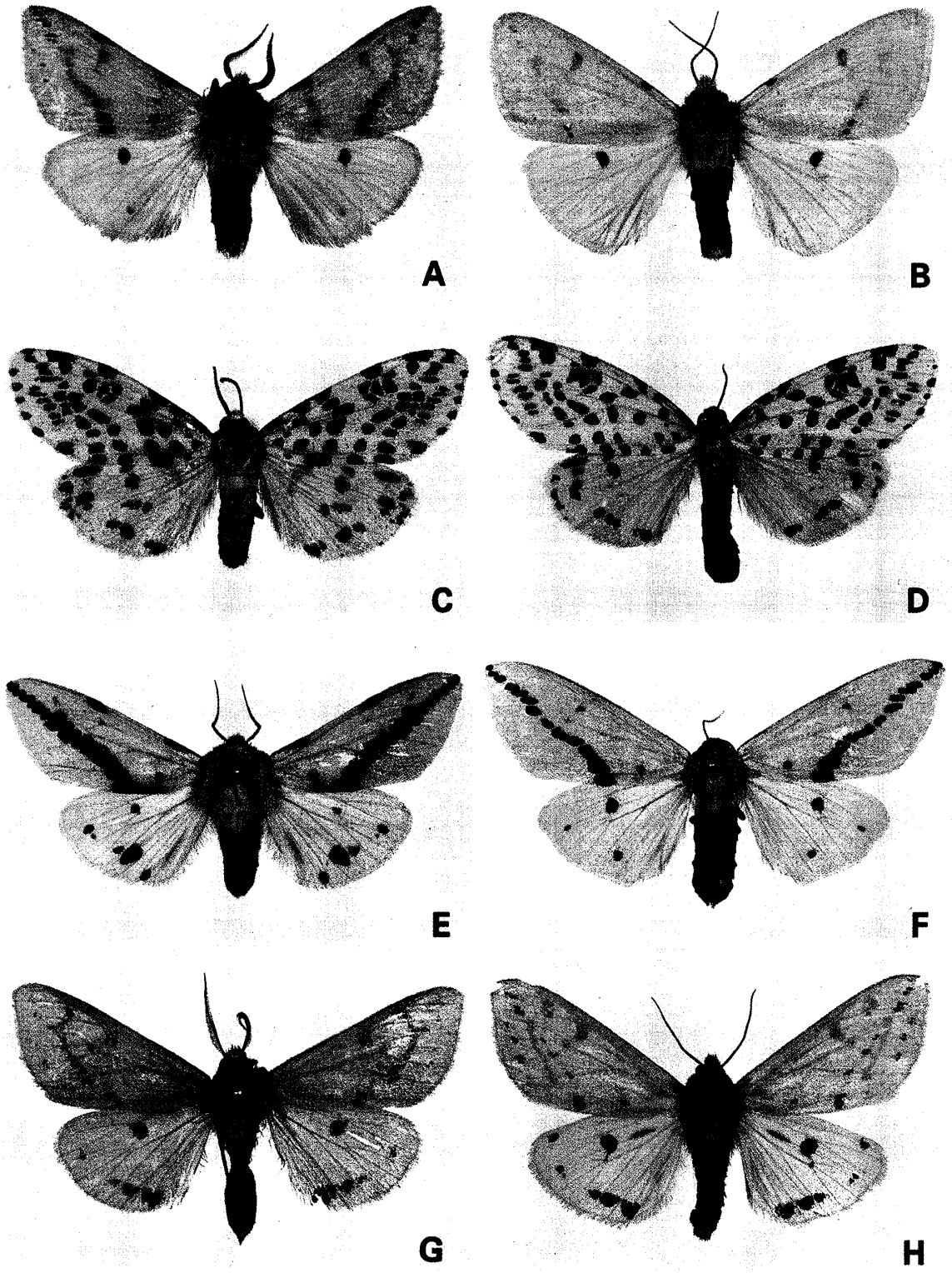

Fig. 118. A. *Spilarctia lutea* (HUFNAGEL), male; B. *Ditto,* female; C. *Spilarctia multiguttata* (WALKER), male; D. *Ditto,* female; E. *Spilarctia obliquizonata* (MIYAKE), male; F. *Ditto,* female; G. *Spilarctia obliqua* (WALKER), male; H. *Ditto,* female.

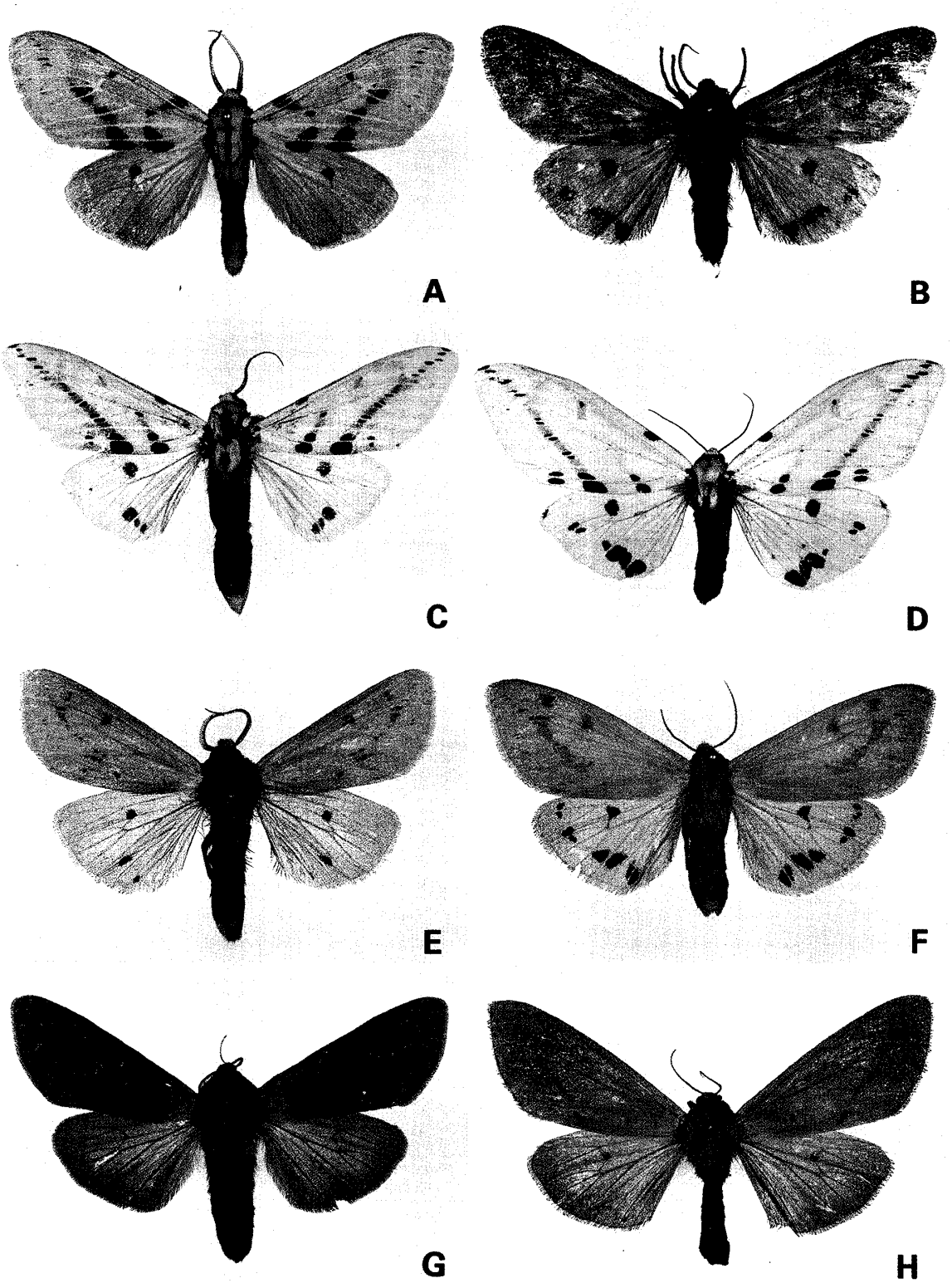

Fig. 119. A. *Spilarctia postrubida* (WILEMAN), male; B. *Spilarctia rubilinea* (MOORE), male; C. *Spilarctia robusta* (LEECH), male; D. *Ditto,* female; E. *Spilarctia subtestacea* (ROTHSCHILD), male; F. *Ditto,* female: G. *Spilarctia wilemanni* (ROTHSCHILD), male; H. *Ditto,* female.